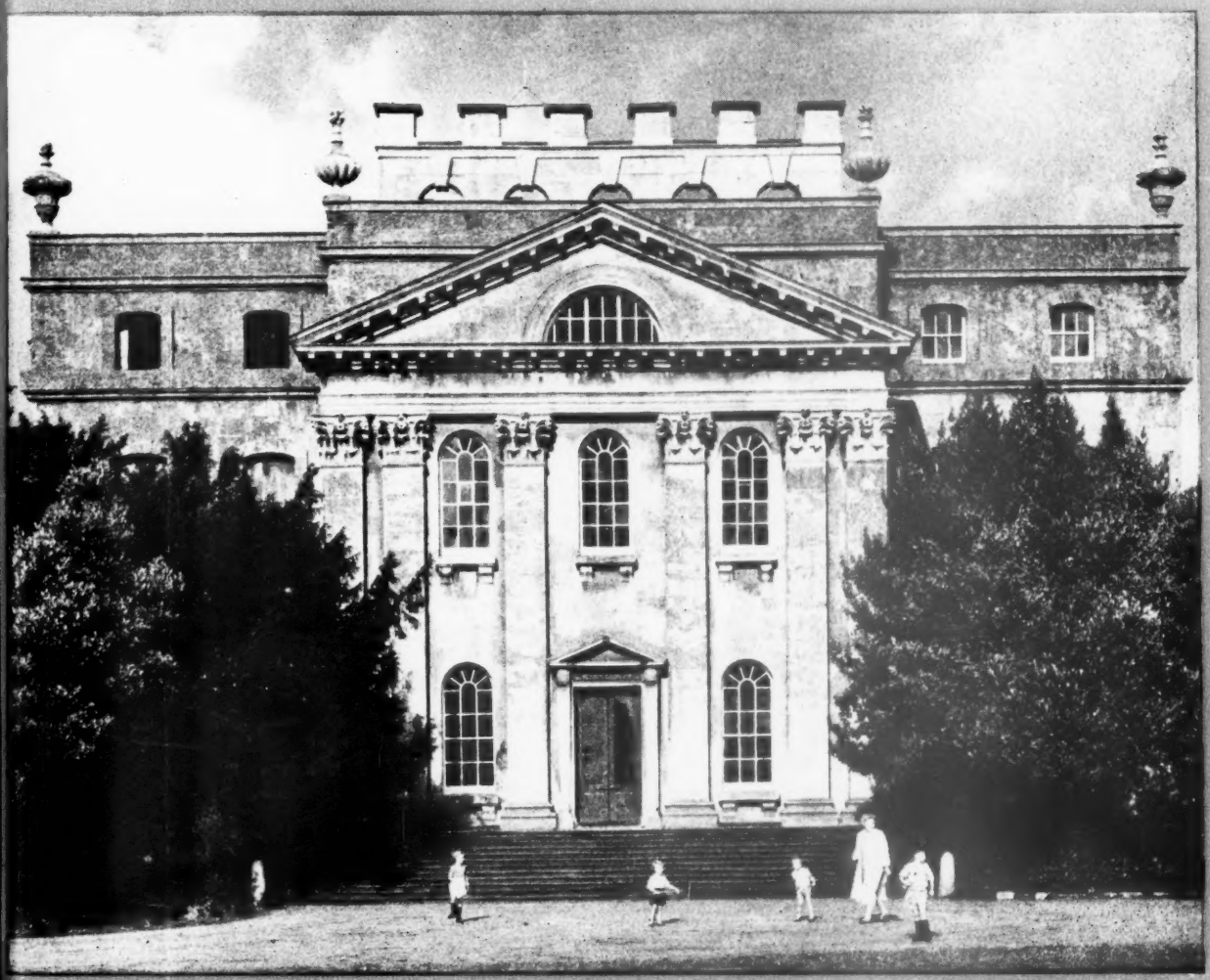
THIRD SERIES VOL 66 NUMBER 12 OCTOBER 1959

THE JOURNAL OF THE ROYAL INSTITUTE OF BRITISH ARCHITECTS

66 PORTLAND PLACE LONDON W1 · THREE SHILLINGS AND SIXPENCE



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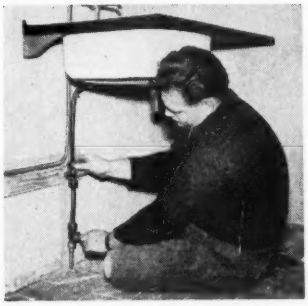

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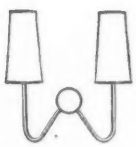

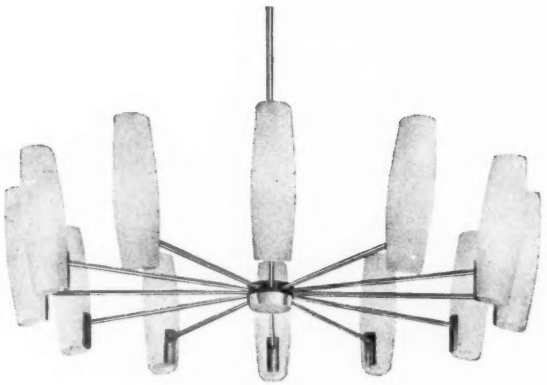

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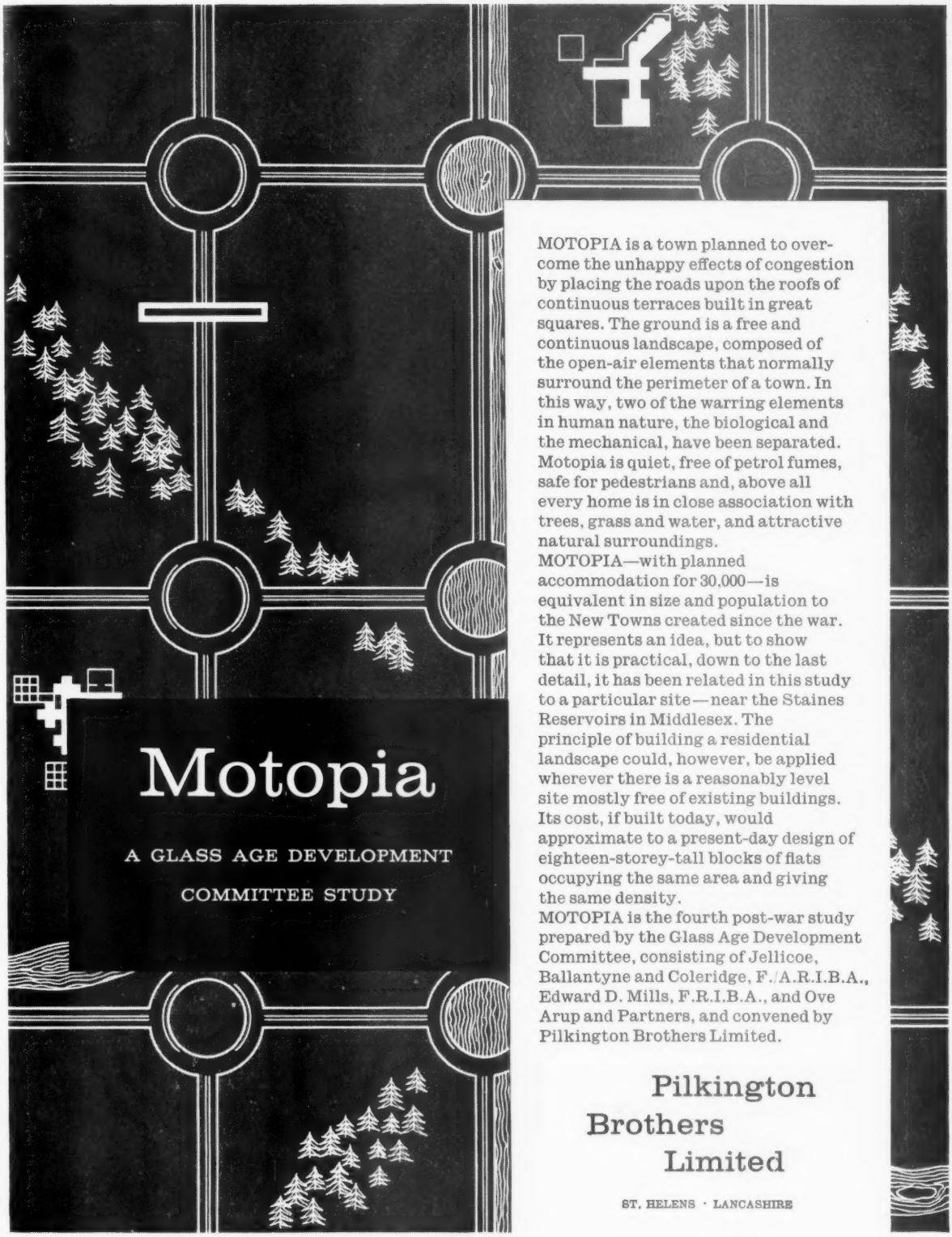

MOTOPIA is a town planned to overcome the unhappy effects of congestion by placing the roads upon the roofs of continuous terraces built in great squares. The ground is a free and continuous landscape, composed of the open-air elements that normally surround the perimeter of a town. In this way, two of the warring elements in human nature, the biological and the mechanical, have been separated. Motopia is quiet, free of petrol fumes, safe for pedestrians and, above all every home is in close association with trees, grass and water, and attractive natural surroundings.

MOTOPIA—with planned accommodation for 30,000—is equivalent in size and population to the New Towns created since the war. It represents an idea, but to show that it is practical, down to the last detail, it has been related in this study to a particular site—near the Staines Reservoirs in Middlesex. The principle of building a residential landscape could, however, be applied wherever there is a reasonably level site mostly free of existing buildings. Its cost, if built today, would approximate to a present-day design of eighteen-storey-tall blocks of flats occupying the same area and giving the same density.

MOTOPIA is the fourth post-war study prepared by the Glass Age Development Committee, consisting of Jellicoe, Ballantyne and Coleridge, F./A.R.I.B.A., Edward D. Mills, F.R.I.B.A., and Ove Arup and Partners, and convened by Pilkington Brothers Limited.

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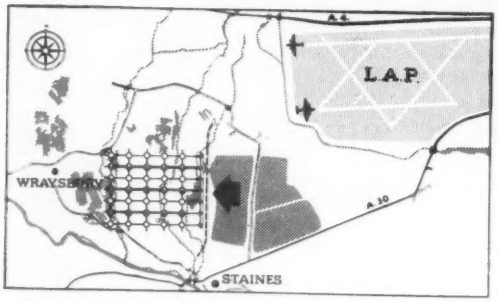

Key to main features of MOTOPIA

1 THE ROADS—connected with the external road system by a flyover—pass along the roofs in double tracks, with ramps at each of the roundabouts leading to the access roads.

2 THE RESIDENTIAL TERRACES consist of ground floor (miscellaneous and covered way); 1st, 2nd and 3rd floors (flats and maisonettes); 4th floor (car park and access road); roof level (motorways). The terraces are broken occasionally by 15-storey flats.

3 THE ROUNDABOUTS contain public houses, a few shops, clubrooms, nursery schools and the like; some with stops for the water-buses which provide internal transport; yacht moorings etc.

4 THE TOWN CENTRE allows for shopping and entertainment for a catchment area for 250,000 people, office accommodation for 3,000, and a few light and service industries. Covered parking for 3,000 cars on two levels and open roof for miscellaneous use, helicopters and cars (equivalent to 1500 car parking spaces).

5 SHOPPING SPACE, approximately 400,000 square feet on two levels (ground and 15 feet) planned in one linear street and balcony served by a moving band, and with paternoster lifts to car parks.

6 THE LANDSCAPE has utilised existing waste gravel pits to form stretches of water (linked to the Thames) for yachting; with the remainder of the area developed for churches, schools, playing fields, sports clubs, rural scenery including market gardens and allotments, and park and forest areas.

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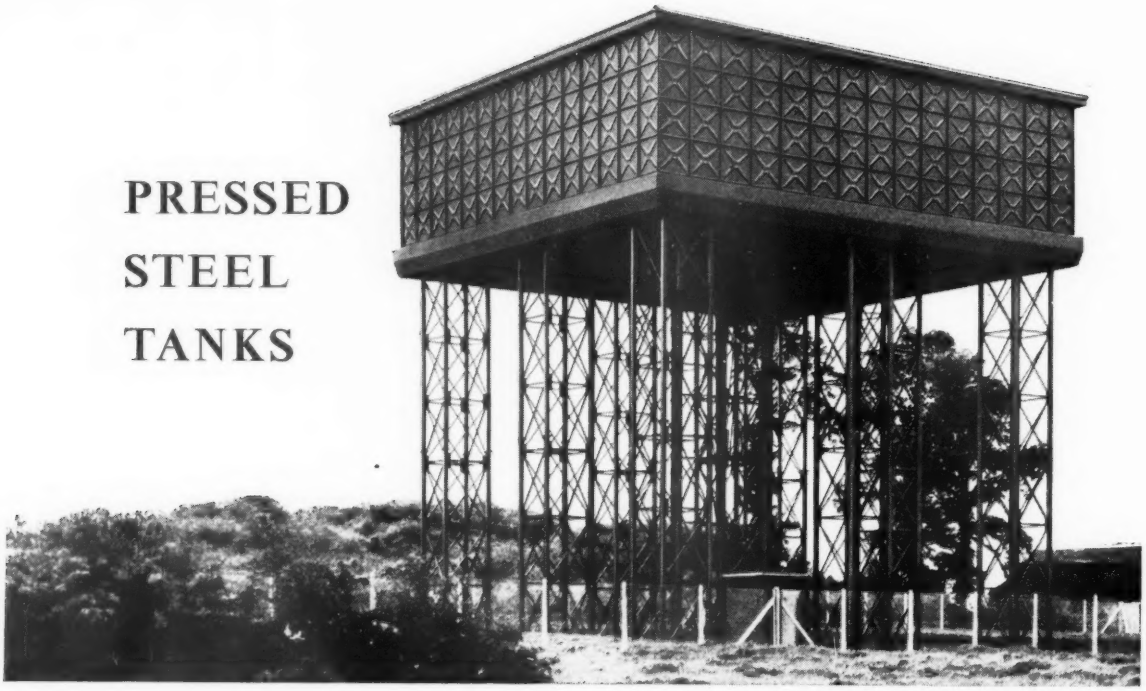
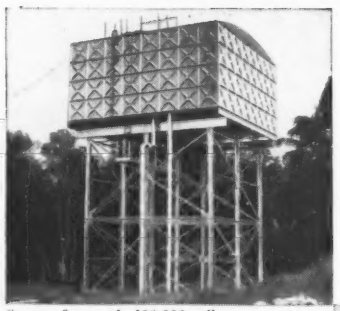


Storage for 340,000 gallons at 52 ft., Southam, Warwickshire. Consulting Engineers W. Herbert Bateman & Partners.



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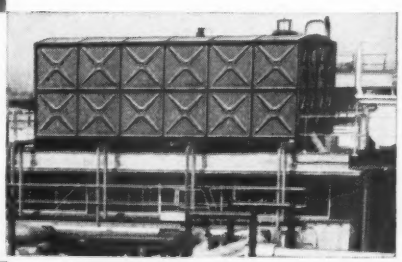
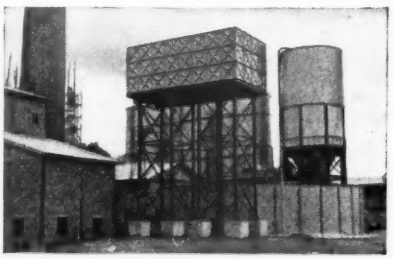
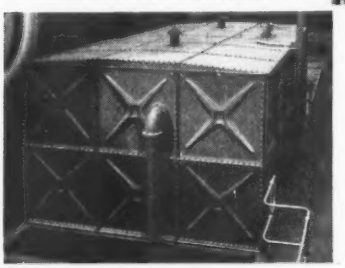


Supported on steel grillages, one of many covered tanks erected at a power station near London. Consulting Engineers Merz & McLellan.

Storage tank for softened water at the Isle of Grain Oil Refinery. (Photograph courtesy Tothill Press Ltd.)



Industrial development, Malaya. Water storage tank at the new works of Malayan Cement Ltd.



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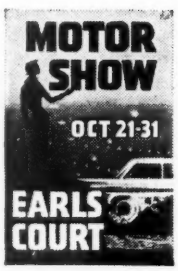

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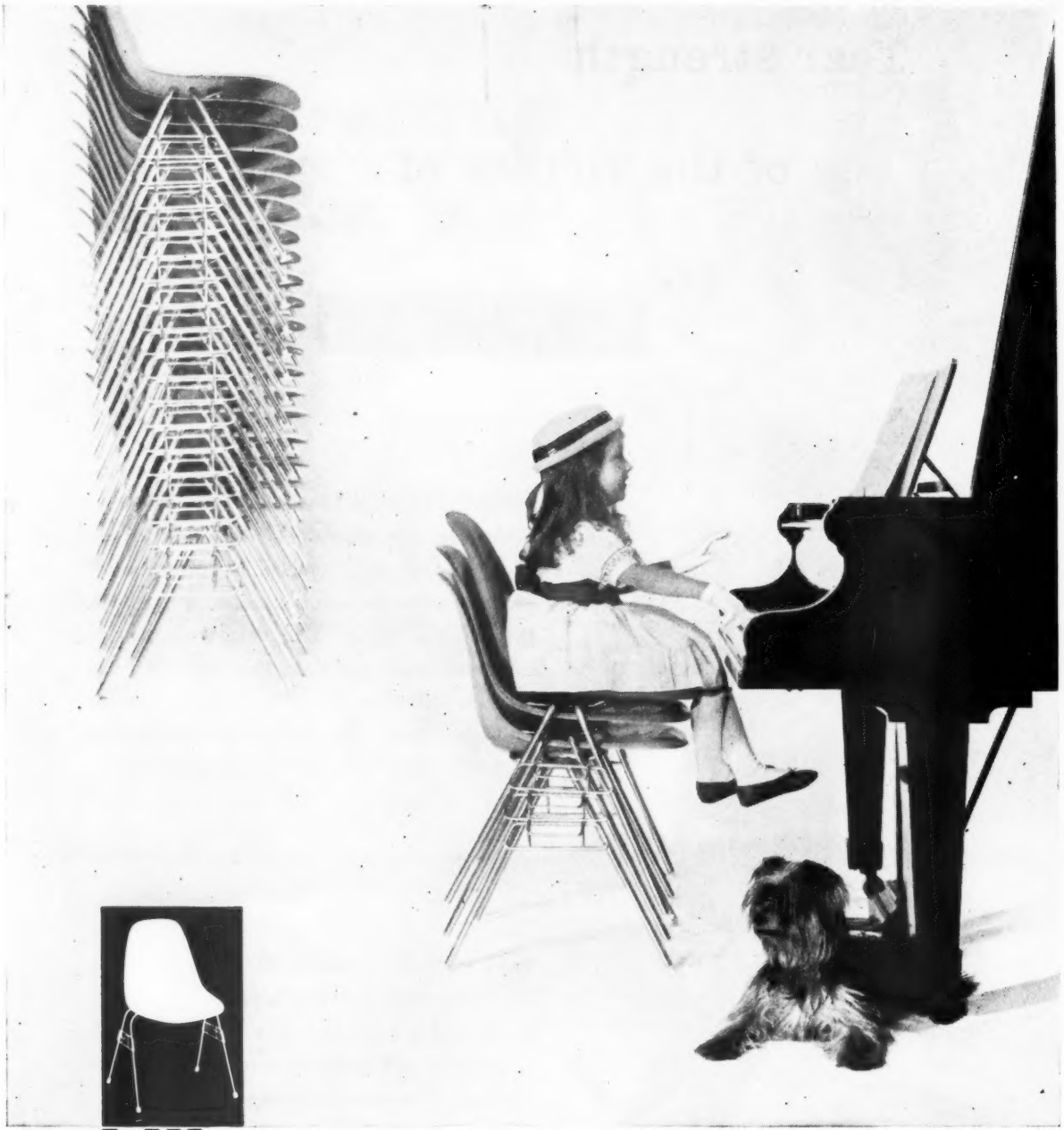

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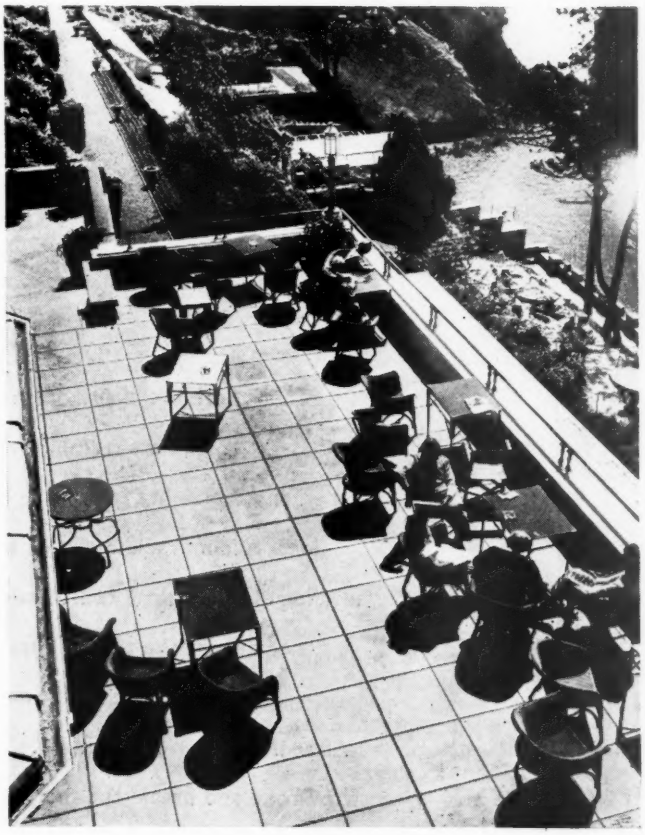

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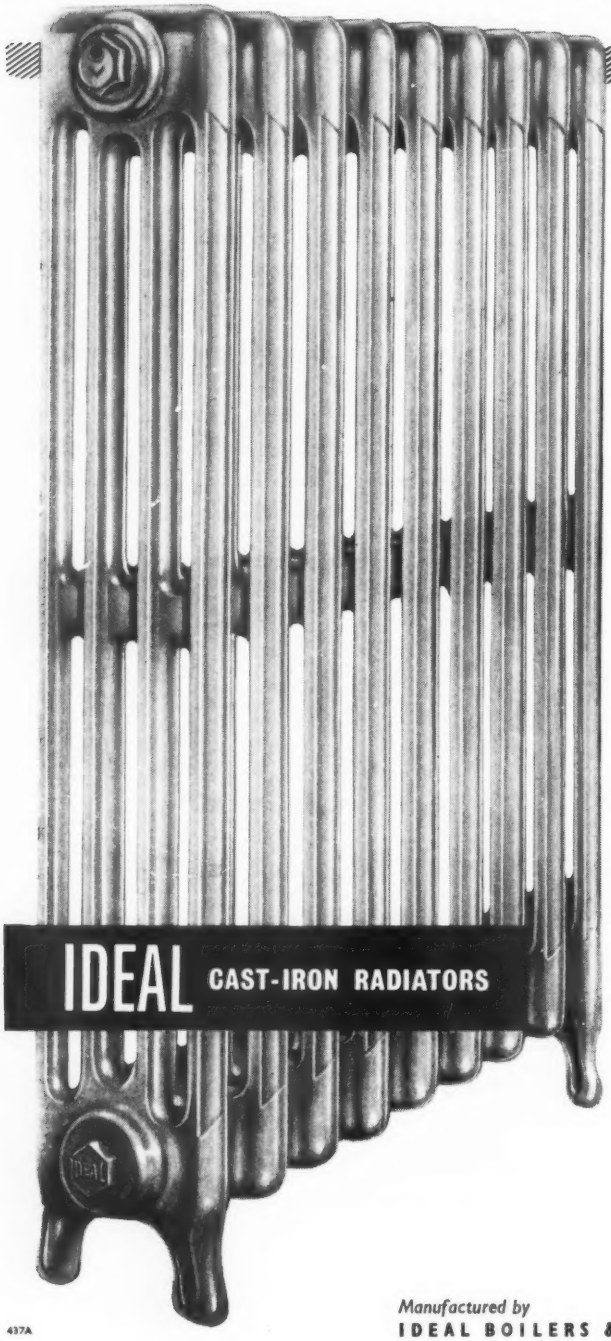

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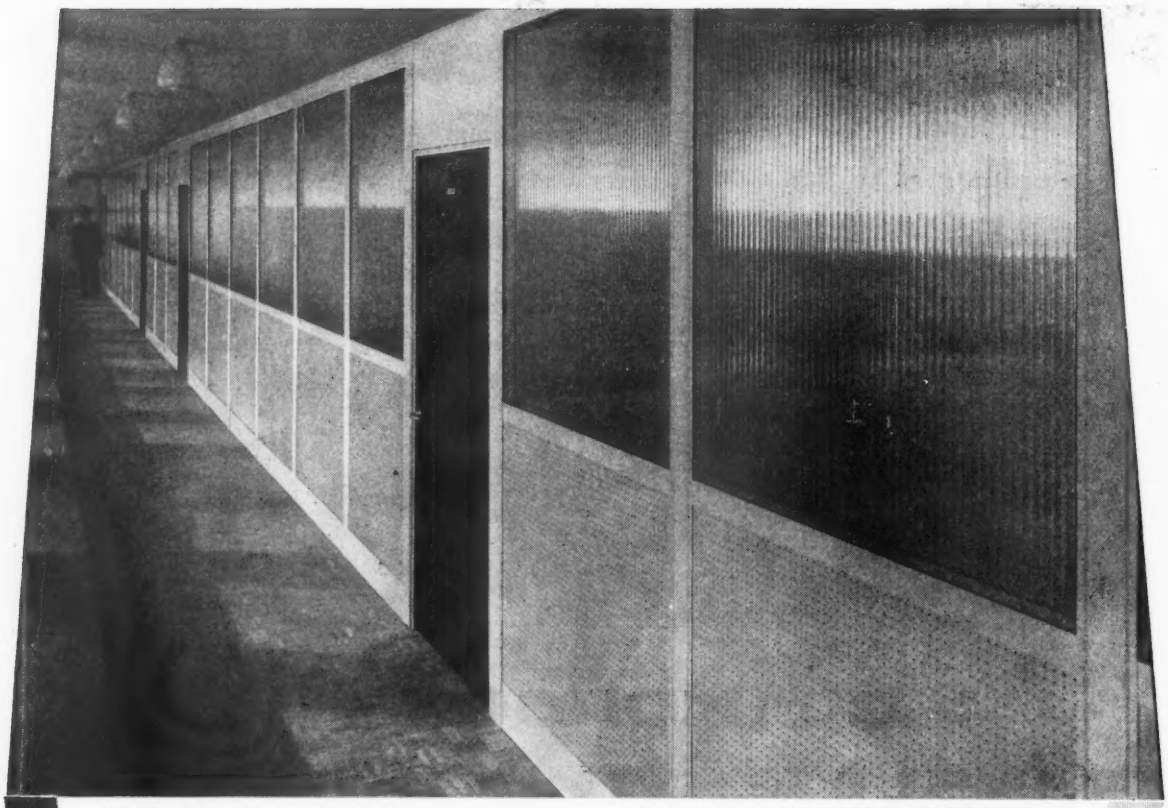

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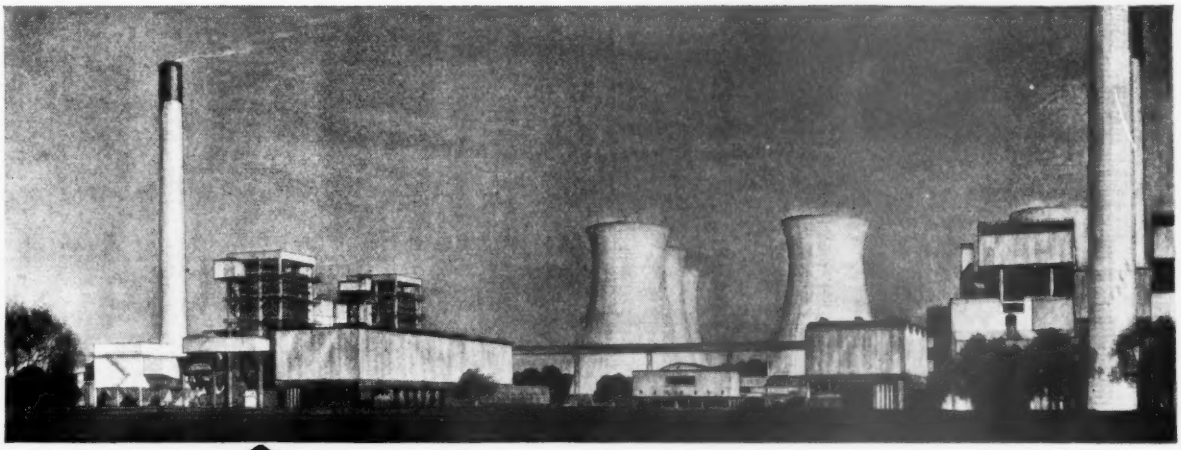

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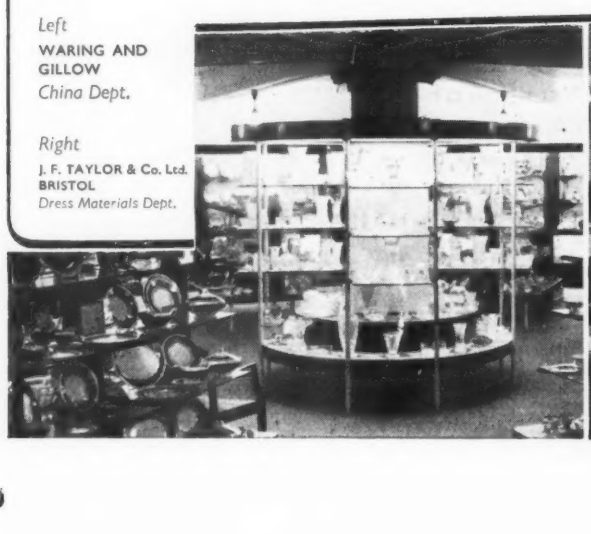

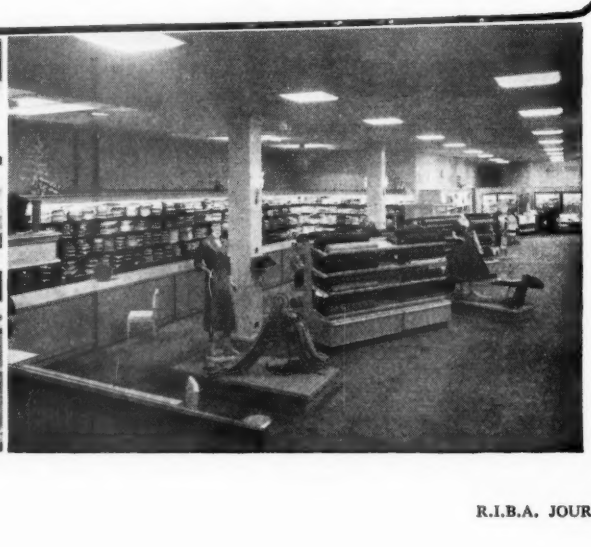

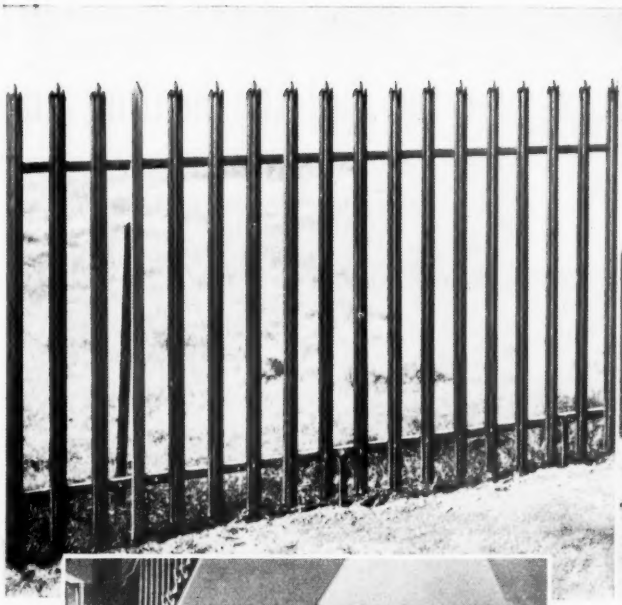

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"I have kept the record of the oil consumption as carefully as I can," he says. "We have certainly had all the heating and hot water we could wish for. I have calculated the cost of the oil at . . . £68.13s.1d. for the year to 25th March 1959. *These figures are far less than I had bargained for, and I regard them as very reasonable.*"

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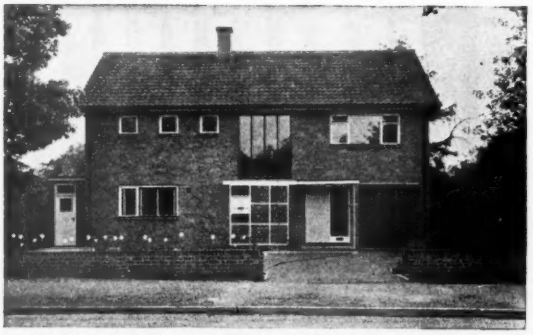

Mr. Brennand's is a cavity-walled house, with double glazing to all windows and doors

Temperature is controlled at 70° in the two main living rooms

Clean, quiet and automatic—Mr. Brennand's 'Potterton' Oil-Fired Boiler at work

DESIGN OF THE HOUSE It is a cavity-walled house, the inside skin being of Thermalite blocks. First floor ceilings are insulated with fibre glass in the loft. There is double glazing to all windows and doors. A separate lounge, dining room, kitchen, larder and cloakroom occupy the ground floor; four bedrooms and a bathroom occupy the first floor. Area of the house is 1,962 sq. ft.
Architect: Robert Neil, A.R.I.B.A., Dawe, Carter & Partners.
Builder: S. & K. Darvill Ltd.

INSTALLING THE HEATING SYSTEM All 7 rooms—plus the hall landing and down-stairs cloakroom—have radiators. A small radiator (10 sq. ft.) is also in the linen cupboard and a towel rail is in the bathroom. The radiators have a total heating surface of 318 sq. ft. Temperature is controlled at 70° in the two main living rooms, and 65° in the bedrooms. The boiler has an electric pump and a Venner Time Switch.
Installing engineers: White, Bays & White Ltd.

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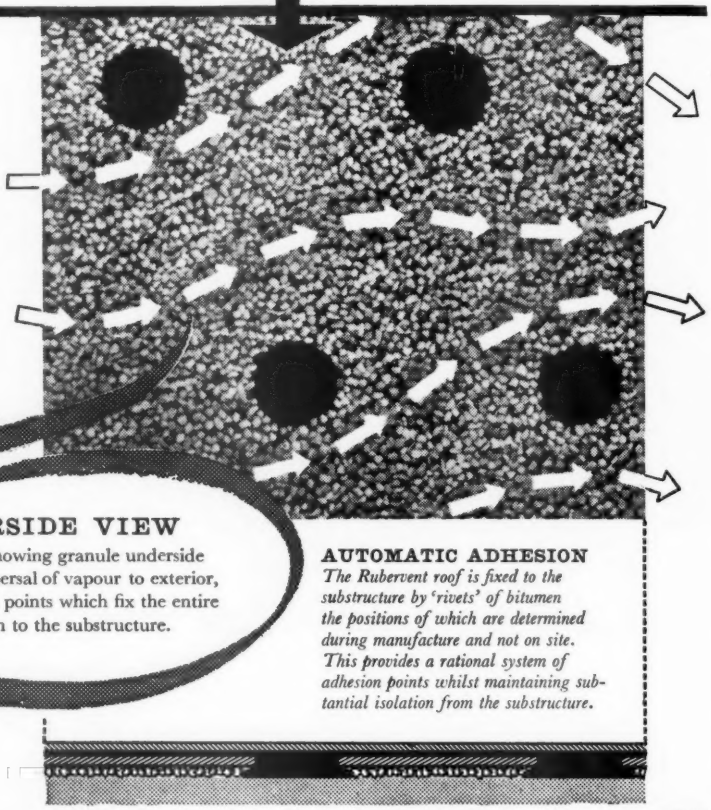

UNDERSIDE VIEW
of Rubervent showing granule underside which allows dispersal of vapour to exterior, and the adhesion points which fix the entire specification to the substructure.

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FINISHES Mineral Surfaced Glass Fibre Based Ruberoid Roofing, Rubervent Mineral Topping or Ruberdal Tiles.
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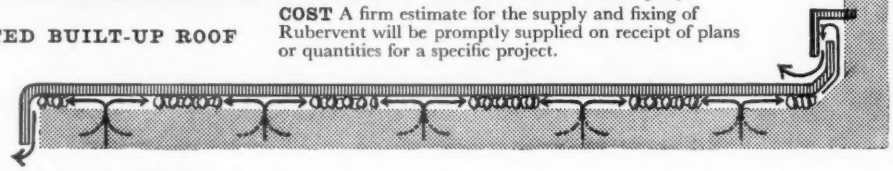

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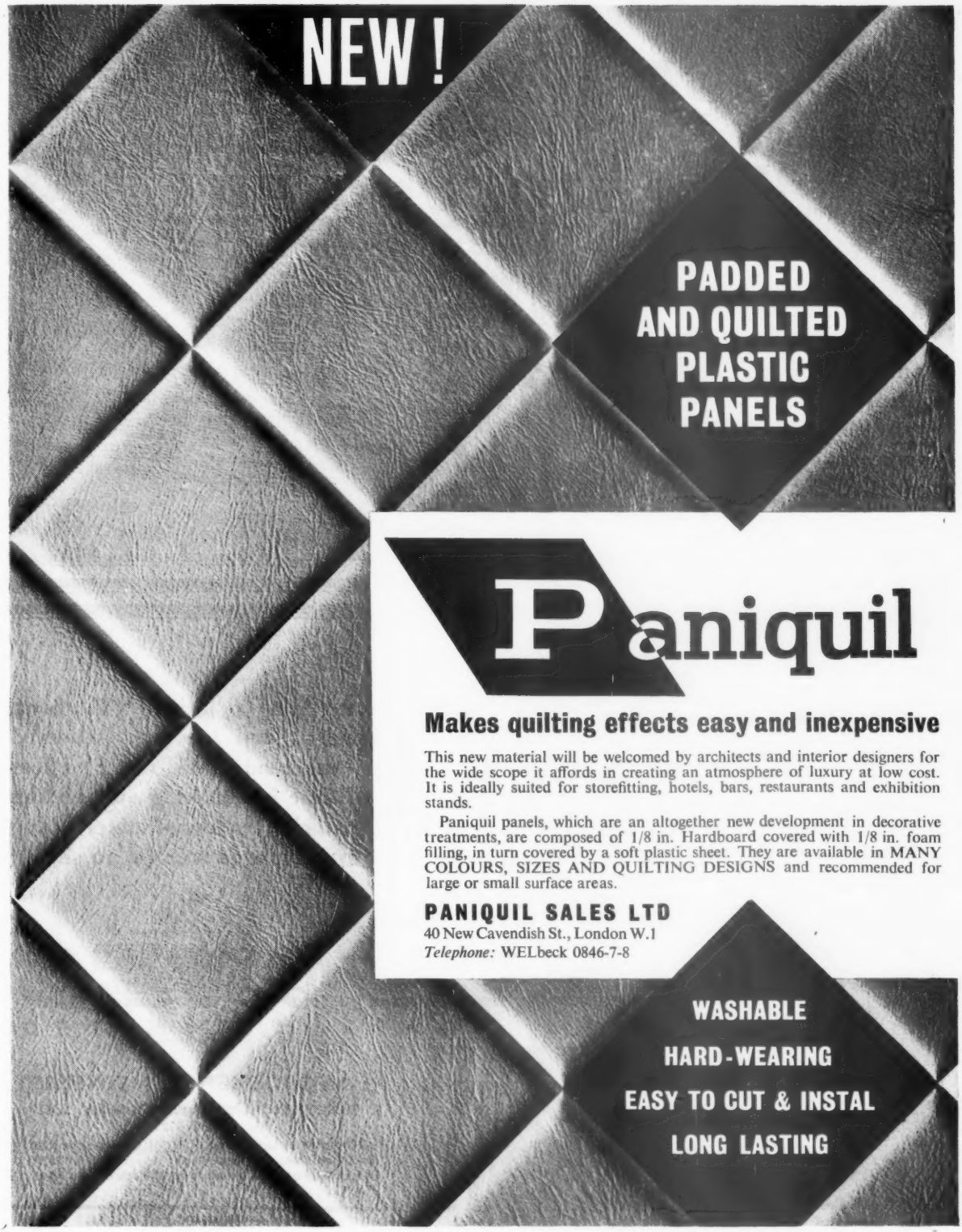
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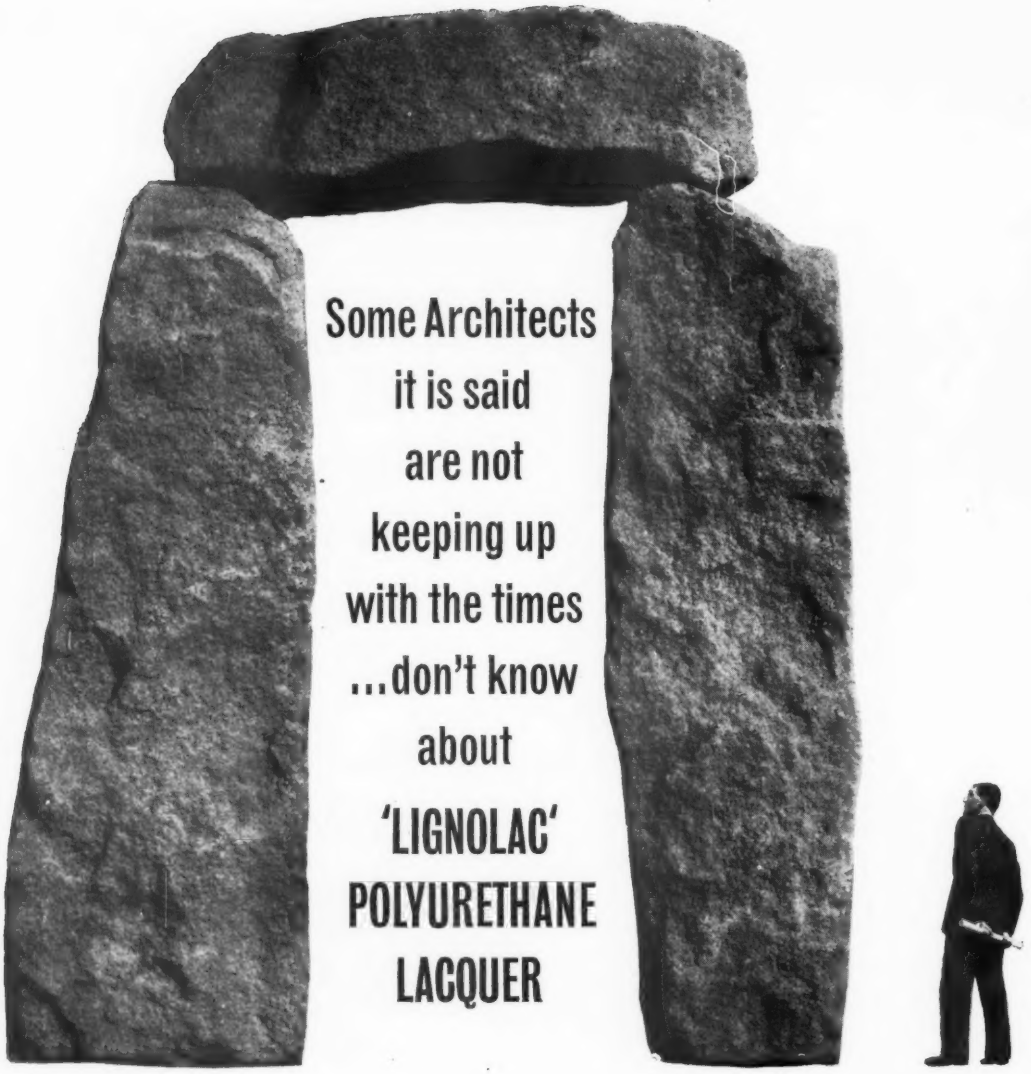

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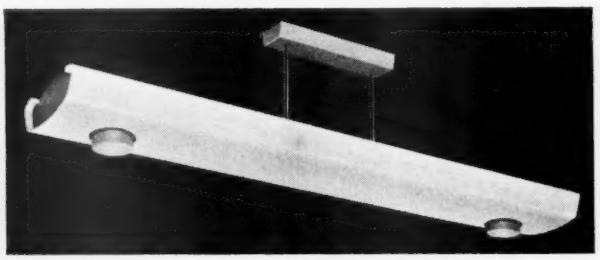

KI 2040: *a smaller version of KI 2080, supplied as a complete pack, using two 4 ft. 40w. tubes and employing two Atlas patented starter/ballast lamps in place of conventional lamps and gear. Opal 'Diakon' diffuser with metallic red end panels. Low initial cost makes it ideal for smaller shops and offices.* List Price £9-17-4 + £1-14-8 p. tax. Complete with tubes and ballast lamps.

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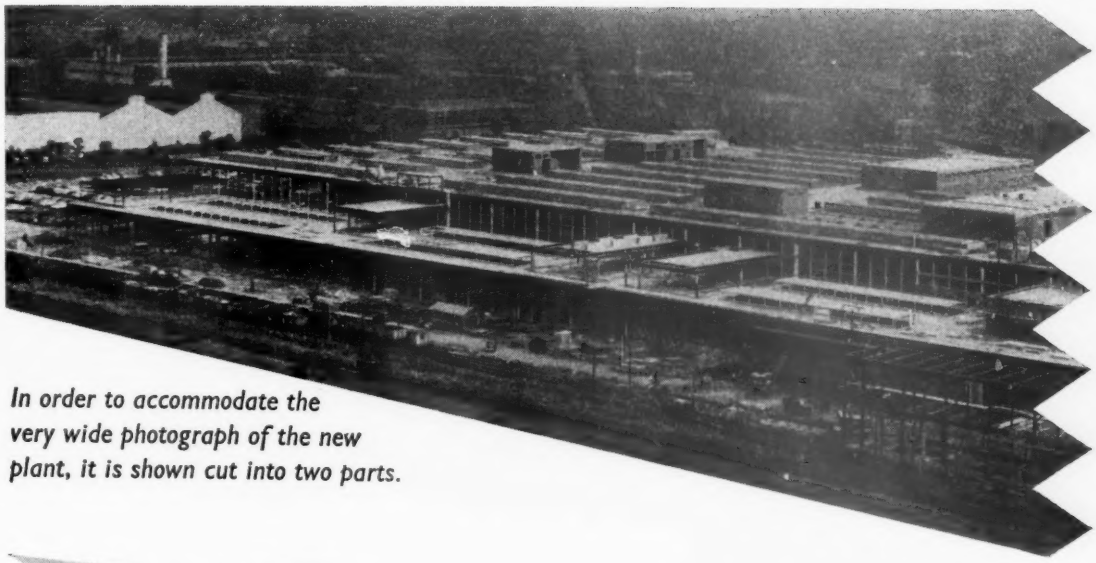
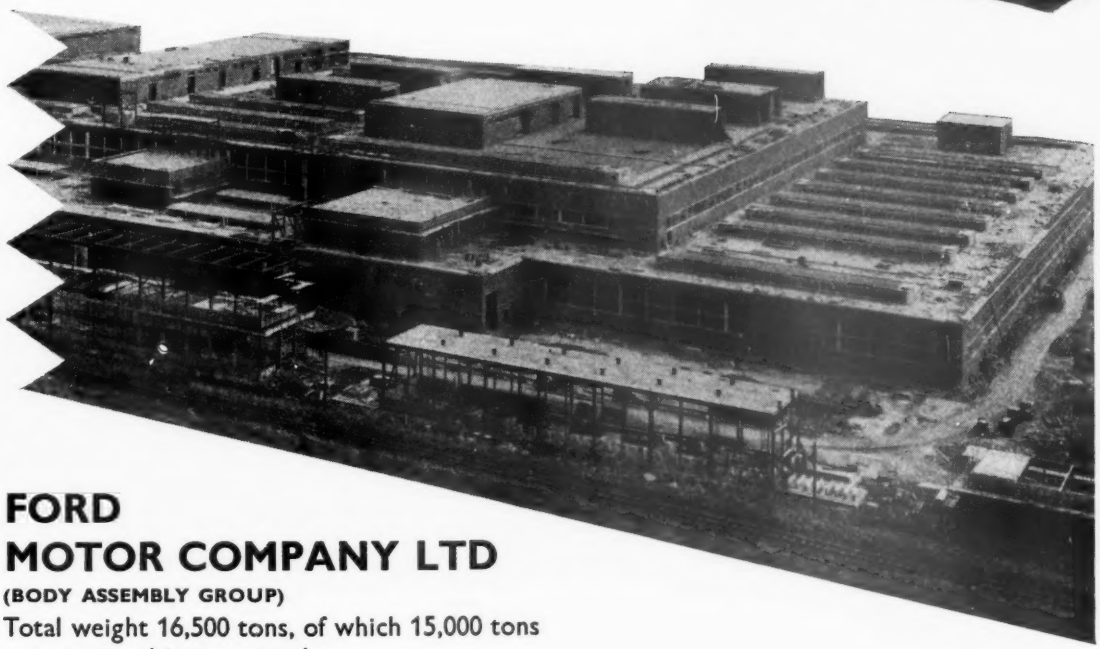


In order to accommodate the very wide photograph of the new plant, it is shown cut into two parts.



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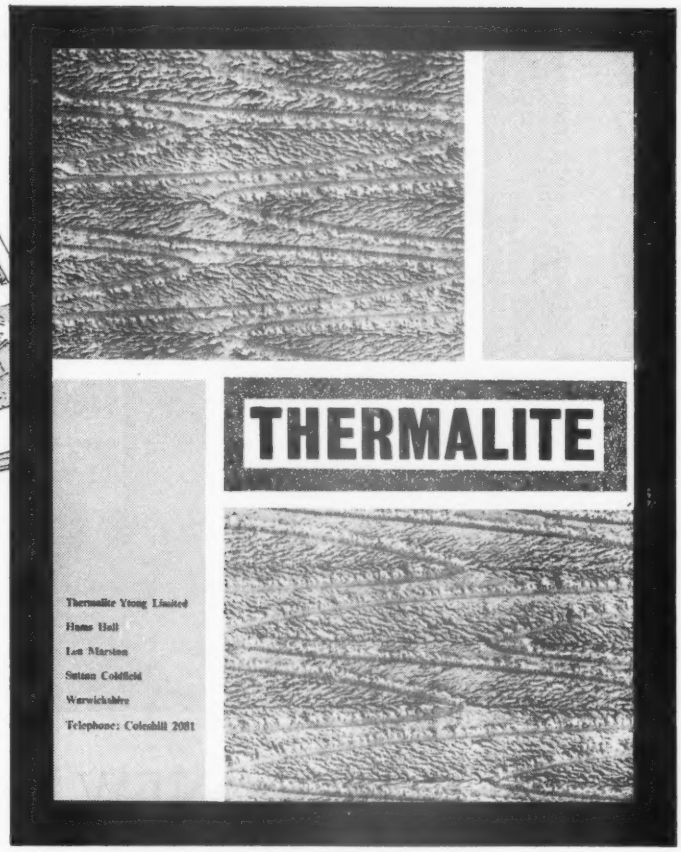

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The contents include: basic data, details and properties (including thermal, acoustic and fire resistance figures), building practice (including recommended mortars, rendering, finishing, decorative treatments, tiling and joinery fixtures), comparative thermal values, load distribution, partition details and laying rates.

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Caroline Estate extension, Hammersmith

ASCOT IN NEW HOUSING (9)

Ascot instantaneous Gas Water heaters have been extensively used for providing hot water in dwellings comprising the London County Council's new Caroline Estate extension at Hammersmith, photographed above. In the eight-storey block, Joanna House, Ascot multipoints have been installed in the 30 three-room and 2 two-room flats. In the ten-storey block, Henrietta House, Ascot 715 'balanced flue' multipoints are provided in 20 three-room and 18 two-room flats. For technical reasons, an alternative water heating system was necessary in 2 two-room flats on the ground floor of this block. In all other maisonettes and flats on the Estate, back boilers have been provided for hot water, except in six maisonettes. Here, Ascot 715 multipoints are installed to obviate difficulties which would have otherwise resulted from having flues for solid fuel fires situated near the ten-storey block.

Two typical installations of Ascot Multipoints in a kitchen and a bathroom in flats on the Estate.

RESPONSIBLE AUTHORITY

London County Council
Architects: Edward Armstrong & Frederick MacManus, F.R.I.B.A.,
Chartered Architects,
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OCTOBER 1959 THIRD SERIES VOL. 66 NUMBER 12 THREE SHILLINGS AND SIXPENCE

EDITORIAL

Royal Fine Art Commission

Her Majesty the Queen has approved Mr. John Betjeman [*Hon. A*] be reappointed a member of the Royal Fine Art Commission on the expiry of his term of office, and that Sir Colin Anderson [*Hon. A*] and Mr. John Piper [*Hon. A*] be appointed in succession to Sir Thomas Merton, F.R.S., who has resigned, and to Lord Methuen, R.A. [*Hon. A*], whose term of office has expired.

Rome Scholarship in Architecture 1960

The conditions of the Rome Scholarship have been revised in two important particulars:

1. The competition has been shortened and it may be taken soon after a candidate has completed his final School (or final R.I.B.A.) examination. The winner will thus be able to go to Italy in the late autumn of the year of his graduation.

2. The Rome Scholar will not be required to hold the scholarship for more than one year, although it will be open to him to request a second year if he so desires. This extension, if sought, will normally be granted if the faculty are satisfied with the use the scholar is making of his time.

A more detailed note appears on page 442.

The Building Exhibition

It has been announced that the Building Exhibition will be opened on 18 November by the Minister of Works. Mr. Basil Spence, President R.I.B.A. and President of the exhibition, will be in the chair for the ceremony.

In addition to the usual exhibitors, who include five Government departments, Finland, Spain and Portugal will be exhibiting for the first time. Finland will show building boards, wallpapers and locks; Spain will exhibit marble, wall tiles, floor coverings and door furniture; and Portugal products of its cork industry and other building materials. Canada and Africa display timber, and many other European, American and Commonwealth products will be shown on the stands.

The A.B.S. stand will be No. 505 in the Grand Hall Gallery, where this year's Christmas cards will be displayed.

Liverpool Cathedral Competition

Particulars of the competition for the design of the Metropolitan Cathedral of Christ the King, Liverpool, were given in the September JOURNAL, page 404, but it should be added that *corporate members of the overseas societies allied to the R.I.B.A.* are also invited to enter.

Comprehensive Redevelopment

After a break in continuity due to the dislocation caused by the printing dispute, the fourth article in the series by Mr. Percy Johnson-Marshall appears at page 417. Mr. Johnson-Marshall is to give this year's Christmas Holiday lectures for children on the same subject. He intends to repeat his *tour-de-force* of last December when he had three projectors lined up to throw simultaneous images on the screen.

After his long spell of labours in the field at the L.C.C. he has now gone to fire the enthusiasm of a younger generation of town-planners in the Department of Architecture at Edinburgh University as a senior member of Professor Robert Matthews' staff.

Perception and Modular Co-ordination

The author of this article (pages 425–9), Mr. Christopher Alexander, has a Cambridge degree in mathematics and a Cambridge degree in architecture. He has recently been doing work at Harvard on visual perception and is now working on a Ph.D. in architecture there. He expects to return to England next year.

The Colonial Churches of Virginia

Mr. Marcus Whiffen, whose article on the Churches of Virginia appears in this issue, received the 1958 Book Award of the Society of Architectural Historians for *The Public Buildings of Williamsburg, Colonial Capital of Virginia*, which was judged the outstanding contribution to the literature of architectural history by an American author or on an American theme, published between October 1957 and October 1958. The award carries with it the presentation of the Alice Davies Hitchcock Medallion.

Part of the New Towns exhibition held at the Royal Academy 2–17 October

New Towns Exhibition

The New Towns Exhibition at the Royal Academy was opened by Lord Beveridge on 2 October.

Speaking as one who was Chairman of the Development Corporation of Newton Aycliffe for several years, Lord Beveridge described the New Towns as an attack on one of the major social evils of the day—the endless growth of towns already too large, congesting their central streets and wasting the life and energy of workers in long daily travel to and from work.

He said that most of the evils affecting human society needed two kinds of action for remedy; negative and positive.

For conurbation, the New Towns themselves were the positive remedy. The negative action that he was sure was also needed was the stopping of the continual growth of new places of employment in the heart of the great cities.

The exhibition, which one would have liked to see amplified to fill the Academy, was organised by the Town and Country Planning Association and the New Towns Corporations, Mr. Eric R. Aldhouse being responsible for the co-ordination and mounting. It has given the public and overseas visitors an opportunity to see in a comprehensive way the outcome of the New Towns Act of 1946. Influence abroad is considerable, for example Elizabeth in South Australia is a 'New Town' in this sense.

Cover Picture

Kings Weston House near Bristol, designed by Vanbrugh for Sir Edward Southwell in 1710–11, has been used, and therefore preserved, as a school since the war, leased for this purpose by the Bristol Municipal Charities who bought it before the war.

In about two years' time the school will move to a new building which is being put up in the neighbourhood, and Kings Weston will once again become vacant and in danger of decay.

This problem has been the concern of the local archaeological, civic and preservation societies, and the President of the Bristol and Somerset Society of Architects, Mr. K. Nealon [*F*], who is also chairman of the Civic Society, has taken the lead in the agitation for saving this monument.

The high arcaded chimneys, which were not built until the architect had been able 'to make tryall of the heights, etc., with boards', have already been partially taken down as they were considered dangerous.

It is therefore urgent that some use should be envisaged that will justify keeping the house in proper repair.

Switzerland on Show

At the opening of the exhibition of Swiss Industrial Architecture on 5 October, Mr. Basil Spence, President, was in the chair and said in his introductory speech that Switzerland, which reminded him of his own native country, Scotland, had contributed greatly to architecture as we know it today. The precision we saw in Switzerland, the perfect finish and workmanship, were second to none. The President recalled a pilgrimage he made to see Swiss churches, which he said were unique. He concluded with a tribute to Swiss friendship and hospitality to visitors. He then invited Professor Alfred Roth [*H.C.M. Switzerland*] to speak.

Professor Roth said—

'The idea that the aims of industrial architecture are purely utilitarian architecture is both incomplete and false. This is so because the task in question renders necessary the consideration of psychological and aesthetic factors if the harmful effects of mechanisation on mental and physical health are to be counteracted. This means that the planning and technical execution of factory plants must be adapted to the human scale, i.e. to individual and social requirements. Any modern factory which is conceived as an organic unit should have well-planned work-areas and provide for those welfare amenities that encourage pleasant and constructive recreation. It also goes without saying that the surroundings should be pleasing to the eye. With such ends in view modern factory design ushers in a new era of humanisation, putting a stop to the exploitation of human labour in unhealthy and degrading settings. There can be little doubt that such changes will exercise no small influence on social and political developments throughout the world.

'In this connection I should like to define what the Swiss architect's creative purpose is when it comes to the planning and construction of industrial plants. Even before our famous countryman, Le Corbusier, had coined the slogan "l'usine verte"—factory in the green—factories had been built in Switzerland with pleasant workshops related to the surrounding countryside.

'The development of factory construction along the lines mentioned above has been given impetus by the special nature of Switzerland's social and economic structure. This has favoured industrial decentralisation right from the start, which implies that the country has been spared the growth of huge ugly industrial centres. Another reason is our complete lack of coal, necessitating the construction of numerous factories near our abundant rivers and streams from which they can gain water power or electric energy. Country people who were not fully occupied in agriculture could therefore be provided with additional employment, a combination of industry and farming that is typically Swiss. With the growth of towns in recent years there have been certain changes and industrial concentration in specific centres became inevitable. But since the price of ground in urban centres has become so expensive, industrial branches and new plants are often forced to be sited in rural areas. This means that our traditional decentralisation, both socially and economically desirable, is finding fresh support and profiting from the well-planned electricity supplies which have been made available over the past few decades throughout the whole country.

'It is easy to see that Switzerland with its above-average standard of living and its highly developed technological resources makes severe demands on the technical and architectural design and finish of industrial buildings. This tendency has been reinforced by the economic prosperity which has continued unabated since the end of the Second World War. Factory owners were not only compelled to launch extension and conversion programmes; they were also enabled to devote more attention to welfare amenities.

'The exhibition gives us Swiss architects a welcome opportunity to honour the extensive pioneer work carried out in England in the field of industrial architecture.

'Today Switzerland is one of the most highly industrialised countries in the world. It follows that the variety of problems we Swiss architects have to cope with is very considerable. Finally I should like to mention the great part played by our technical colleges in our country's industrial development. At their head is the Federal Institute of Technology in Zürich, where technical and industrial research are carried on and engineers and architects trained for work at home and throughout the world.'

Professor Roth on behalf of the Federation of Swiss Architects thanked the R.I.B.A. for their hospitality, and mentioned Alfons Barth who was responsible for collecting the material and the layout of the exhibition, Hermann Ernst of the Swiss Building Catalogue, and the late Ernst F. Burckhardt (who was killed a year ago in a car accident in Sussex) for the idea of the exhibition. He also thanked the Swiss Office for the Development of Trade and the Swiss Foundation *Pro Helvetia* for their financial support.

His Excellency the Swiss Ambassador then declared the exhibition open.

Small House Plans, Progress Report

The book of Small House Plans published by IDEAL HOME sold 1,500 copies during the exhibition of the competition designs at the Building Centre and sales are said to be going steadily. Up to 15 October, 16 sets of plans had been sold.

Show houses are being built at the following places: Leverstock Green, Herts.; Windsor; Bognor Regis; Highgate Park, Preston; Bromley, Norwich; King's Norton, Birmingham; Leicester; Weymouth; Stockport; Bradford; Glasgow; Hythe, Hants; Maghull, and Maidstone. These houses will be furnished by the C.O.I.D. and from local resources under the direction of Lady Casson [*A*].

R.I.B.A. Diary

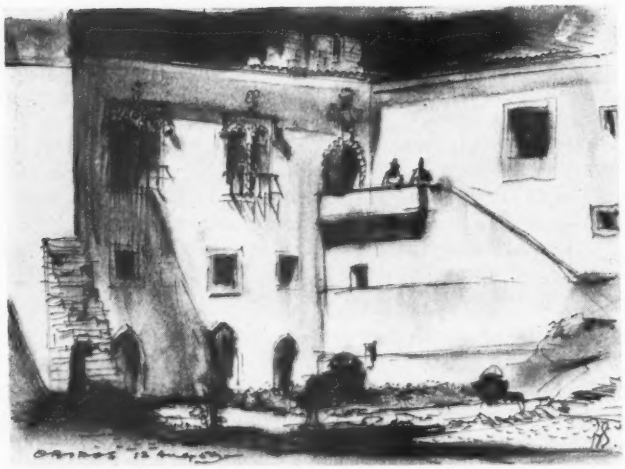
TUESDAY 3 NOVEMBER, 6 p.m. General Meeting. President's Inaugural Address. Presentation of the London Architecture Bronze Medal 1958. Presentation of R.I.B.A. Award for Distinction in Town Planning.

MONDAY 16 NOVEMBER, 5.45 p.m. Open Meeting about the Code of Procedure for Selective Tendering.

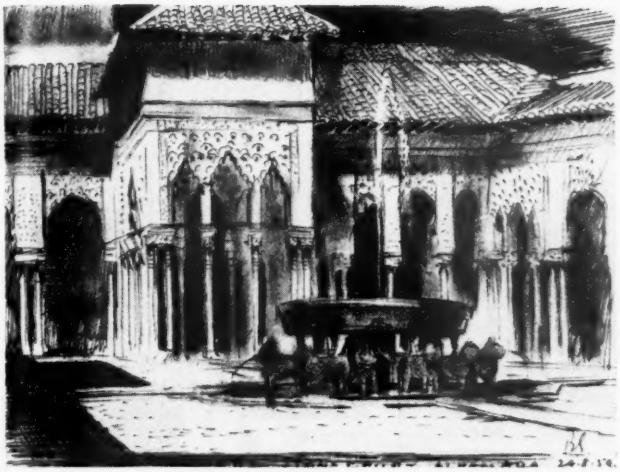
MONDAY 16 NOVEMBER, 6 p.m. Library Group. Mr. M. S. Briggs [*F*] will give a talk entitled 'On the Reviewing of Architectural Books'.

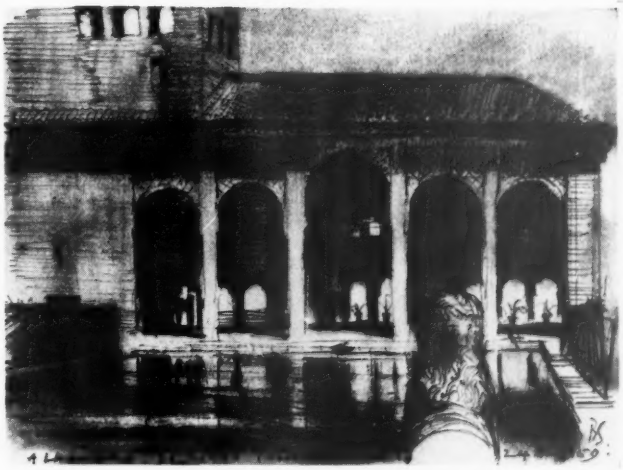
WEDNESDAY 18 NOVEMBER, 6.30 p.m. Discussion on Electric Floor Heating. Chairman, Mr. Richard Eve, B.Arch.(McGill) [*A*].

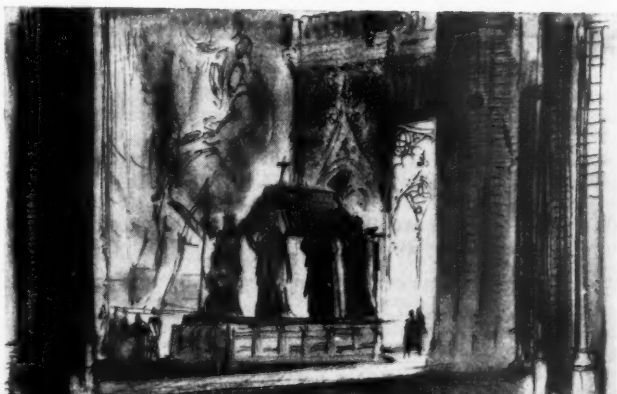
Nine pages from the President's Sketchbook



Reproduced from direct drawings in black ink on cartridge paper, originals 7 in. × 5 in. by Mr. Basil Spence, O.B.E., T.D., A.R.A., A.R.S.A., President R.I.B.A., during a holiday in France, Spain and Portugal. July, August 1959.






SEVILLE — CATHEDRAL

R.I.B.A. Survey of new building work for which private architects have been appointed

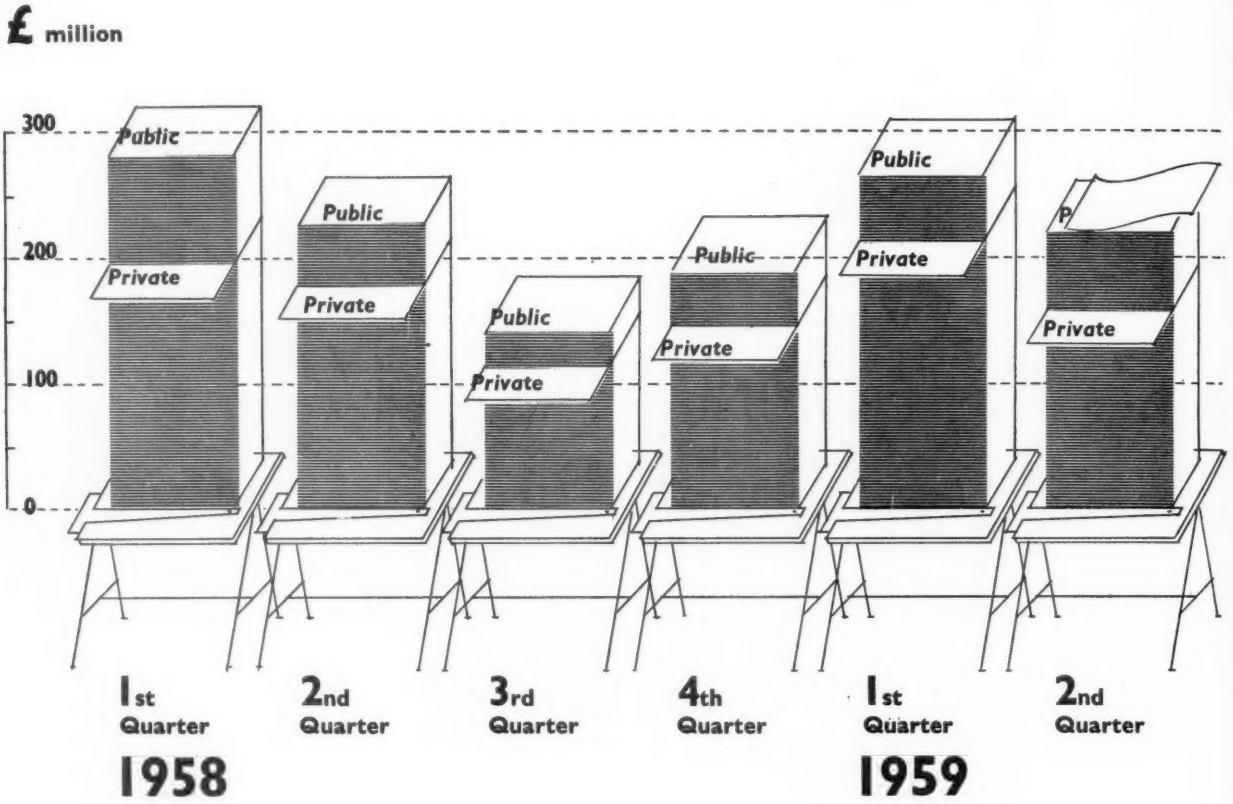


Fig. 1: New work for private and public clients for which private architects were appointed

THE INSTITUTE have been collecting from a sample of their members in private practice details of the value of new building work for the design of which they have been appointed as architect, for each quarter from the beginning of 1958. From these figures, a series of quarterly estimates has been prepared of the total value of new building work commissioned of private architects, at the very early stage when the client has appointed the architect with a reasonably firm intention to go ahead with a building (i.e. well in advance of any approach to the building contractor). It is hoped that this series will serve as a guide to the trend in future demand for new buildings in the field for which private architects are responsible—which has in the past covered possibly 40 per cent or two-fifths of all new buildings and about half of the new work done for private owners and developers.

Table 1 below gives the results for the four quarters of 1958 and the first two quarters of 1959. The totals cannot be taken as an absolute measure of future building work, because a proportion of work for which architects are appointed never in fact materialises—a variety of circumstances may lead the client to change his mind before working drawings are prepared, or even later. The series is rather an attempt to measure a trend in demand—to assess the extent of the client's *intentions* to build in any quarter in relation to intentions in previous years.

The results should be used with caution at this stage, because the series has not

Table 1. ESTIMATED VALUE OF NEW WORK FOR WHICH PRIVATE ARCHITECTS WERE APPOINTED

Period	1958	Percentage change on previous quarter	1959	Percentage change on previous quarter	Percentage change on same quarter of 1958
	£ million	%	£ million	%	%
First quarter	280	..	267	+41	−5
Second quarter	226	−19	222	−17	−2
Third quarter	141	−38			
Fourth quarter	190	+35			

been long established and there are still a number of unknowns. In broad terms the figures show the relatively low level of new work coming in during the last half of 1958, particularly the third quarter, with a marked improvement in the early months of 1959 following on the Government's measures to stimulate the economy by the relaxation of credit restrictions and the successive lowering of the bank rate. However, new work in the first half of 1959 was less than in the corresponding half of 1958, particularly work for private clients. There are indications, confirmed by returns now coming in for the third quarter of 1959, that election uncertainties have been holding up building plans for several months past.

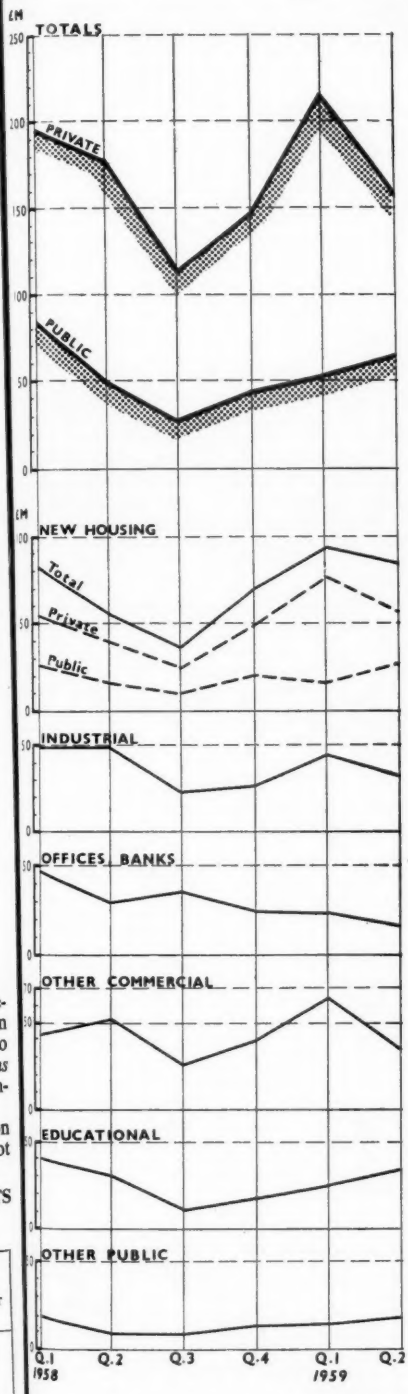


Fig. 2: New work analysed by kind of building

Analysis by kind of building

Table 2 analyses these quarterly figures by type of client (public or private) and by different kinds of buildings. Only a small part of the work done by private architects comes from public clients (over the three-year period 1955/56/57, an average of 30 per cent of the work certified by private architects was for public clients and 70 per cent for private clients); the volume of work given out by public authorities will tend to fluctuate according to the pressure of work on their own architect's departments. During 1958, the proportion that new public work represented of the total of new work coming to private architects declined from 30 per cent in the first quarter to 20 per cent in the third quarter, and stayed at about that level until the second quarter of 1959, when it rose again to 29 per cent of the total. The value of new public work in the second quarter of 1959 was 33 per cent higher than in the same quarter of 1958. Both public housing and hospital building showed a substantial increase, with a small increase in educational buildings (see Figure 2).

New work coming in from private clients declined to a low level in the third quarter of 1958, and then rose to a peak in the first quarter of 1959, 9 per cent higher than a year earlier. Private housing and 'other commercial buildings', i.e. shops, places of entertainment, etc., both showed a big increase, but offices and banks showed a fairly steady downward trend. Although the figure for industrial building in the first quarter of 1959 was considerably higher than in the last half of 1958, it was still less than a year earlier, and fell off substantially in the second quarter.

Seasonal trends

The quarterly figures are beginning to suggest that there is a seasonal pattern in the flow of new work, with a first quarter peak decreasing to a third quarter trough and recovering again to a new high in the following first quarter. Private architects covered by the inquiry were asked to comment on this in the light of their own experience. Several have confirmed the existence of a seasonal pattern, accounting for it in the main by the influence of holidays—'it follows from the general exodus during the summer of developers holidaying abroad . . .', commented one architect. The timing of a firm's financial year may also be a factor; it was suggested that commercial firms, particularly in retail trade, tend to put new work in hand early in the year, when their previous year's trading results are known. Another commented 'that in the spring, by the established processes of nature, birds build their nests and clients call on their architects. If nothing much comes in between the end of January and Whitsuntide, we expect to have a thin time.' A minority of architects did not support this view, however, and denied the existence of any seasonal pattern.

Timing in relation to the building process

A question that will be of interest to anyone wishing to use the results of this inquiry will be: what sort of time interval is likely to elapse before new work for which the architect is appointed may be expected to reach the building contractor in the form of a firm contract? The interval between the appointment of the architect and the start of building work on the ground is subject to a number of factors that may influence individual projects in different ways, e.g., the raising of the necessary finance, the working out of the clients' brief, the obtaining of planning consents, the pressure of work in the architect's office. Some idea of the likely influence of these factors was obtained through the Royal Institute's inquiry into the building timetable,[1] which analysed for some 300 building projects the time taken at the various preliminary planning stages. This showed that the average time taken between the architect's receipt of first instructions and the start of building work on the ground was 20 months (the median or mid-point was 17 months, half of all

[1] See the R.I.B.A. JOURNAL of August 1958.

projects taking less than this and half taking more). There was a substantial variation between different kinds of buildings, as follows:

Average number of months between the receipt of first instructions and the start of building on the ground

Industrial buildings	13
Housing, two storey	16
Educational buildings	18
Housing, multi-storey	21
Commercial buildings	22
Other public buildings	26
Average, all buildings	20

This inquiry related in the main to a 'boom' period for building, when there was a lot of work in the pipeline. The time taken was therefore probably longer than might be expected during a period of relative slackness of demand.

Table 2. Analysis of new work by type of building

£ million

Type of building work	1958				1959	
	1st quarter	2nd quarter	3rd quarter	4th quarter	1st quarter	2nd quarter
New housing						
For public authorities	27	17	10	21	17	28
For private developers	55	39	26	49	77	57
Total new housing	82	56	36	70	94	85
Industrial building	49	49	22	25	46	32
Offices and banks	47	29	36	24	23	16
Other commercial buildings	43	52	26	39	64	36
Schools, technical colleges and university buildings	40	31	12	19	26	34
Hospitals, clinics and other buildings owned by public authorities	19	9	9	13	14	19
Total new work	280	226	141	190	267	222
For public authorities	84	49	28	44	53	65
For private developers	196	177	113	146	214	157

Proportion of new building work covered by the survey

An earlier survey of private architectural practice[2] showed that private firms were responsible for the design and certification of about one-third of the estimated total of new building work (excluding civil engineering work) in the three years 1955/56/57, as the following figures show:

Table 3. Estimated value of new building work certified by private architects
(annual average for 1955/56/57 of work in Great Britain)

	Total value of new building work	Work certified by private architects	
		Value	as a proportion of the total
	£ million	£ million	%
For public authorities	552	116	21
For private owners and developers	608	268	44
Total	1,160	384	33

The figures for new work for which private architects have been appointed cannot be directly related to the above figures for work certified by private architects, even allowing for the appropriate time interval, for two main reasons. Firstly, the figures for new work will include a proportion of projects for which the architect will be required to give only partial services, e.g. to undertake only the design and not the subsequent supervision or certification of the contract, which may be handled by, for example, a building contractor. These partial services represented on average 16 per cent of the total value of new work in the first two quarters of 1959; for private work, the proportion was higher, amounting to about 20 per cent of the total. If partial services were given on a similar scale in earlier years, it would be found that private architects were responsible for the design of about 40 per cent of all new building work and 50 per cent of all new work for private clients.

Secondly, architects are appointed for a good many projects which never materialise as actual buildings. This can happen for many reasons, such as a change of mind on the client's part, a failure to raise the necessary capital, to obtain a building site or to obtain planning consent. No information is available on the extent of this abortive work, although it is thought to account for a substantial part of the difference between the figures for new commissions and work certified. The 'casualty rate' is however, likely to vary with the prevailing economic conditions, at least in the short term. (A small number of firms have offered to examine their records to see whether any underlying relationship between new work coming in and work certified can be established over a period of years, but the results of their analysis will not be available for some time.)

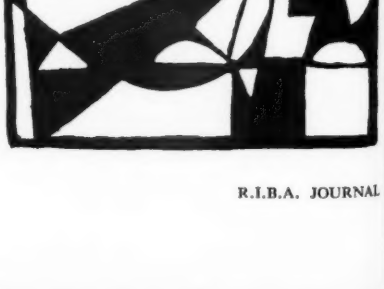
Conclusion

This series of figures is still at a very early stage, and the results must be treated with caution for the reasons explained above. There is also the fact that, because of the sample nature of the inquiry, a few large commissions coming to small firms can have an undue influence on the results. However, the Institute think it worth while to publish the results at this stage, so that they can be discussed, and their basis understood in readiness for the time when the series has been longer established and may be of more proven value.

Although it would be dangerous to draw any firm conclusions, it seems clear that a considerable volume of new work has reached private architects in 1958 and the first six months of 1959. The totals of £837 million in 1958 and £489 million in the first half of 1959 compare with a level of building work certified by private architects (i.e. work actually built) of £435 million in 1957 and £350 million in 1958. Even when allowance is made for the two factors of partial services and abortive work described above, it would suggest that the future level of new work to be reaching the building contractor from the private architect may be greater than in recent years. Whether private architects are increasing their share of the work available is, of course, an unknown factor.

Method of inquiry

The information given above has been derived from a quarterly survey of a sample of all private architectural practices run by members of the Royal Institute. The sample was selected from a basic register of private practices classified by size of office (in terms of the total architectural staff employed) and by region. The sample is a stratified one, composed of all firms with 11 or more architectural staff, one in every two of the firms with 6 to 10 staff and one in every ten of those with 5 or fewer staff. The results are based on the regular returns made by some 400 of these firms (a response rate now stabilised at about 60 per cent) covering about one-third of private practice in terms of architectural staff employed.



[2] R.I.B.A. JOURNAL of April and June 1959.

Comprehensive Redevelopment IV—The Time Dimension*

by P. E. A. Johnson-Marshall, Dipl.Arch.(L'pool), A.M.T.P.I. [*A*]

ONE of the most difficult problems of town planning is that concerned with time. A town may be planned and built within a few years, but a city is almost inevitably a matter of generations. In Europe, and in Great Britain in particular, we are dealing almost entirely with the replanning and rebuilding of existing cities, and these cities are often very old, with remnants of their framework reaching back in time over centuries. Often it is not too much to say that today's architecture is created in, and conditioned by, the urban pattern of yesterday's culture.

Owing to the lack of conscious planning and co-ordinated control over the last 150 years, a series of maladjustments has taken place, to the ever increasing detriment of the city as a human environment. A road pattern, for instance, which was more than generous for a small centre with horse and pedestrian circulation has become hopelessly inadequate for a large city with the fantastic increase in motor traffic which we are now experiencing. In the meantime the slow process of piecemeal renewal and increasing property values has held the old pattern in a vice grip which only large scale acquisition and demolition can change.

Another problem of time in relation to the lack of planning is created by the increase in building volume which can take place in a city without complementary changes accompanying it. The most glaring example of this is Manhattan in New York, where the road pattern remained more or less static, but the building types, based on family residential units, changed over a period of about 100 years to offices and commerce, and a vast increase in building volume occurred on each site.

Perhaps the most difficult lesson to learn, particularly for the architect, is that urban redevelopment may take many years to achieve, and therefore one has to think of urban design as a continuous and flexible process. Famous civic set pieces which we are accustomed to think of as comprehensive architectural unities sometimes took centuries to complete. The Piazza of St. Mark in Venice is a good example. The story began somewhere around the beginning of the 9th century, when the nucleus consisted of the Byzantine church of St. Theodore, a castle, a campanile, and an orchard. When the Venetians brought the remains of St. Mark from Alexandria in 828 A.D., a new church was built alongside the old one. This church of St. Mark was rebuilt in the 10th century, and rebuilt again in its present form about 1,000 A.D., the Byzantine church then being demolished to stress Venetian independence. The castle was rebuilt five times, the third time marking the change from castle to palace. The Doge who was responsible for the fourth rebuilding, Sebastiano Ziani, was also the first real planner of the Piazza, the floorscape of which, incidentally, was resurfaced first in brick in 1264, and then in stone in 1723. The present Doge's Palace was built in the 14th century, and then followed the Watch Tower (1496–1499), the Campanile, rebuilt in its present form (1513), the Procuratie Vecchie along the north flank by Sansovino (1500–1532), the Library also by Sansovino and others (1540–1588), the Procuratie Nuove along the south flank by Scamozzi (1582–1640), and the church of St. Gimignano, moved from a site near the campanile to close the west side of the Piazza. Finally Napoleon demolished the west side, including St. Gimignano, and replaced it with a large dance hall! So the time scale for the creation of St. Mark's Piazza was approximately 1,000 years, its form evolving over many generations, partly by the somewhat haphazard grouping of public buildings, and partly by conscious design.

The centre of Paris is another obvious example of a great civic and cultural area being developed and improved over centuries, each piece of development and redevelopment opening up and adding to the totality of the urban design. The rate of change varied from period to period, but right up to recent times there has been a consistency in the evolution of the centre as a totally designed scene.

London, on the other hand, has had no such design continuity, and is paying dearly for it today. When the City merchants failed to take advantage of the magnificent opportunity presented to them by the Great Fire and Christopher Wren, they threw away the last chance of changing the basic medieval pattern. But there are many facets of urban design, and the combination of new building controls, which introduced standard street widths and restricted the use of materials to brick and stone, and the introduction of standard pattern-book dwelling types with their new architectural forms, in fact created over a period a new city vastly different from its predecessor. When it was enlarged in the 18th century by the planned layouts of Bloomsbury and the West End, the total urban environment was probably the finest in Europe. It was further adorned by the large scale improvements of Nash, but his most spectacular achievement of Regent Street had a sorry aftermath during the 19th and early 20th centuries, when the co-ordinating architect-planner disappeared from the scene, and the road engineers reduced the replanning of cities to 'road improvements'. Disintegration followed in the form of estate agents and speculators organising the rebuilding plot by plot up to the road frontages. When architects were occasionally brought in on large scale schemes they tried vainly to recapture the old Renaissance urban forms, as at Kingsway in London or the Headrow at Leeds, but by this time the nature of the problem had changed, and fundamental new artefacts were being developed, such as the underground railway, the motor vehicle, the steel frame and of course the revolution in architectural design.

Today the time dimension in planning still creates some of the most difficult problems. The planner has to design not only for present needs, and in this he is faced with many completely new factors, but he must take into account the even more complicated possiblities of future trends. These might of course either intensify or ameliorate his problem. For instance, the increase in the number of motor vehicles without a complementary increase in planning funds to cope with their needs may well give him cause for despair, while the possible advent of helicopters and 'hoppicopters', or one-man helicopters, poses frightening problems of circulation in the future. But these could well be counterbalanced by a lessening in the need for over-concentration in city centres, by the redistribution of employment and population on a national basis, by the mechanisation of many duties now performed by man, and by the development of new technical equipment such as moving walkways and stairways to ensure the complete separation of pedestrians and vehicles.

One of the most real dangers at the present time is that the desperate congestion and inefficiency caused by the motor vehicle may lead to large-scale unilateral action involving ruthless civic surgery, and European cities in particular, with their hundreds of years of accumulated cultural history, could thus be permanently disfigured.

The broad implications are clear. It is increasingly urgent that national and regional planning policies of a far reaching character be implemented, so that the fundamental determinants of urban design, the location and density of working and living places, may be more equably distributed throughout the country and its constituent planning regions. Within this planned strategic framework the urban designers could get to work with reasonable hope of success, by using the technique of comprehensive development as a method for replanning and rebuilding cities in time as well as space.

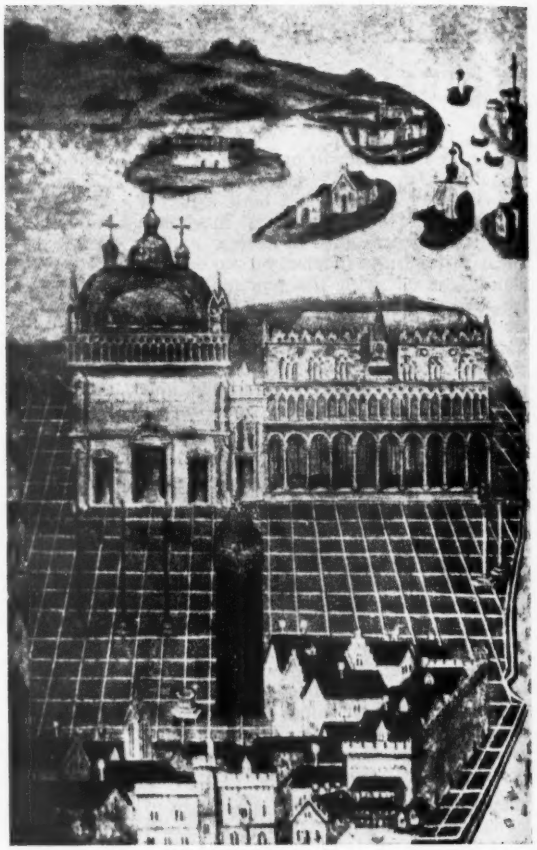
(*Illustrated examples: pages* 418–21)

* *Fourth part of a report of the lecture given at the R.I.B.A. on 9 December 1958, with Mr. Basil Spence, President, in the chair.*

The Time Dimension

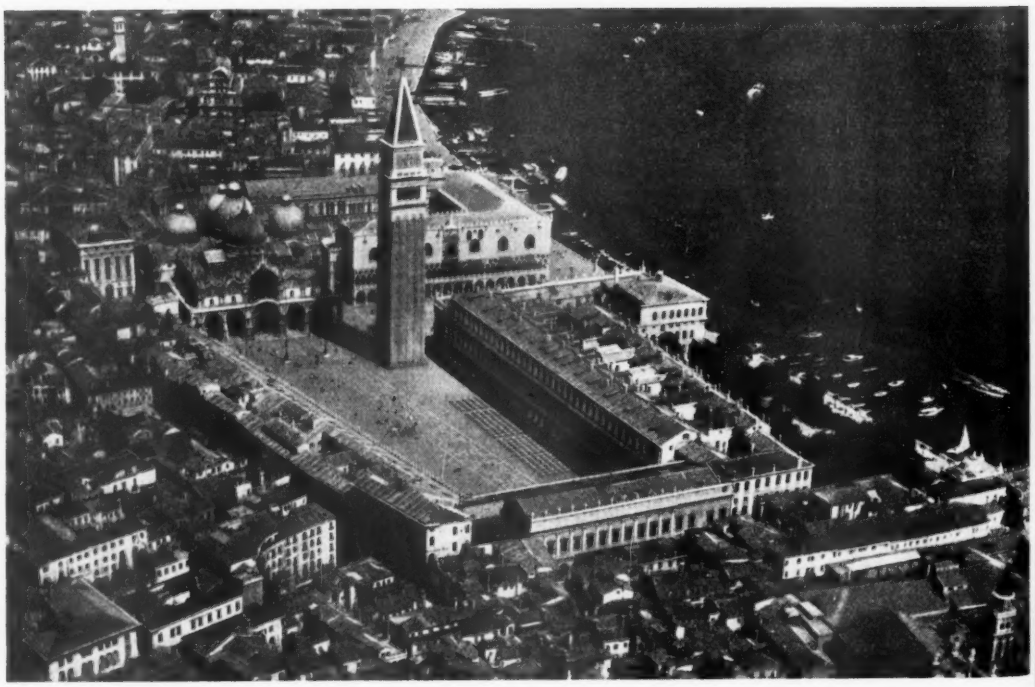
VENICE: The Piazza of St. Mark

A conjectural view of the original village. The church already exists, and with a castle and campanile formed the nucleus of the Piazza in the 9th century.



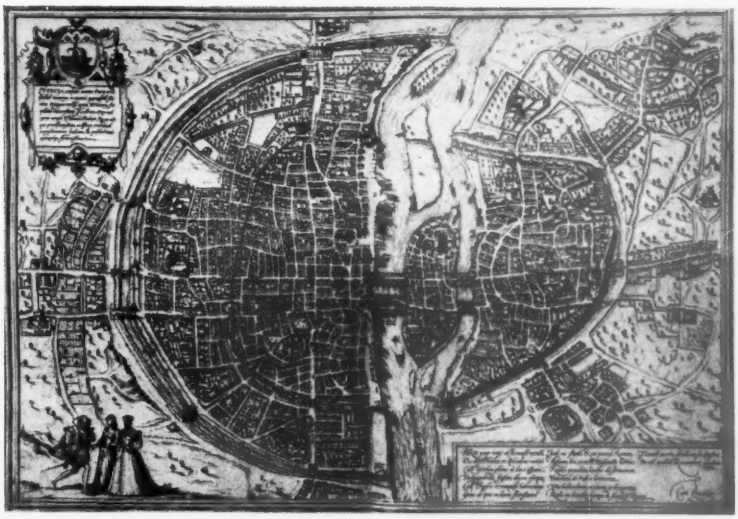
A 13th-century drawing: the Piazza has achieved form, although much remains to be done. It was only towards the end of its 1,000-year progress that the magnificent group of public buildings which enclose the great western part was built.

The Piazza today, with Napoleon's finishing touch of the dance hall closing the western flank, and with a floorscape designed to be seen from above as well as to be used by thousands of pedestrians. The recovery of such large areas for pedestrians in the centres of our cities is a major planning task today.



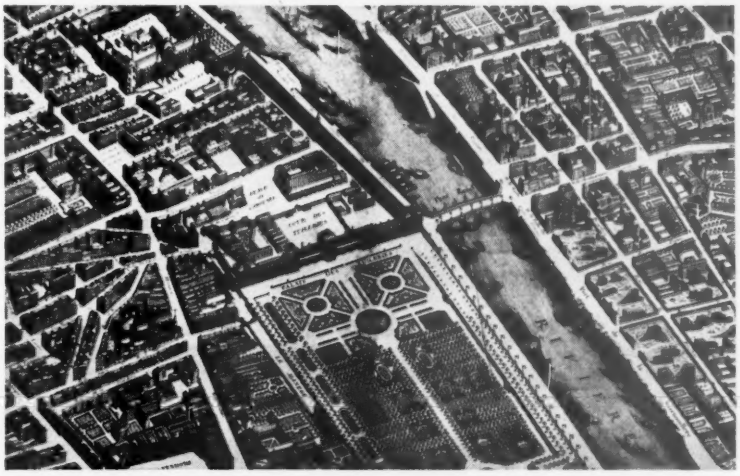
PARIS

From Braun and Hogenberg's map of 1575



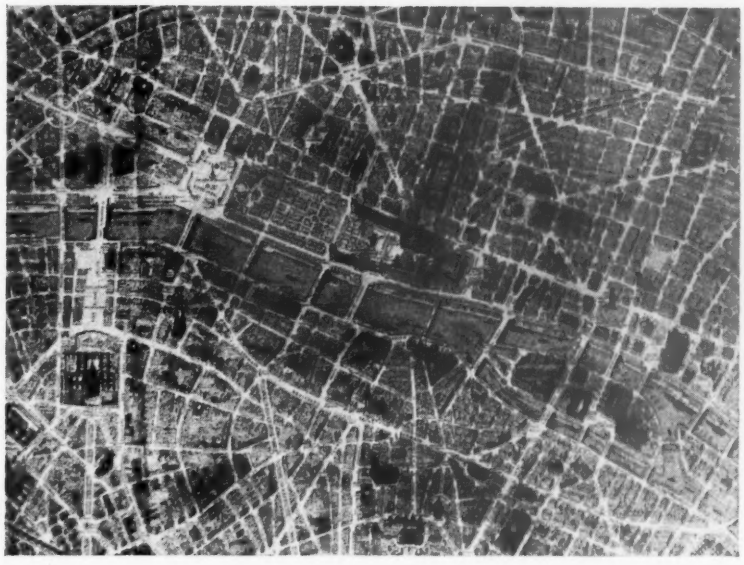
FROM BRAUN AND HOGENBERG'S MAP OF 1575. The original medieval pattern, complete with city walls and moat, although already with a concentric ring on the north (left) side. The Louvre is still a castle, but already the quays along the river banks give a foretaste of broad urban spaces.

From Turgot's map of 1742

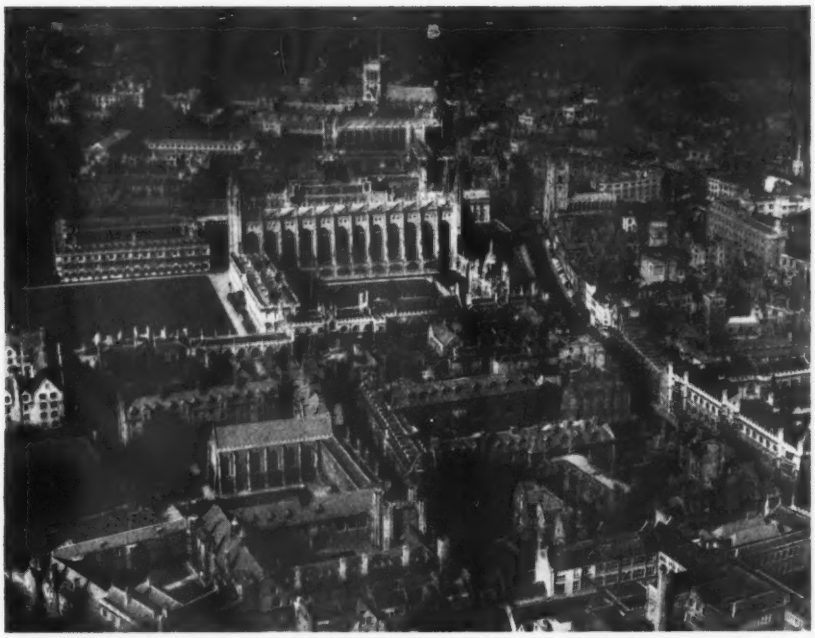


FROM TURGOT'S MAP OF 1742. The planned urban centre emerging from the medieval pattern. The great core of palaces, public buildings and their formal gardens have been created, but the older pattern of buildings still huddles among the great new courts and palaces.

A contemporary drawing



A CONTEMPORARY DRAWING. The great Renaissance city centre is now largely completed, with its geometrical forms of avenues, vistas, and round-points. The total achievement is due to the combined operations of crown, state, municipality and wealthier citizens over several hundred years.

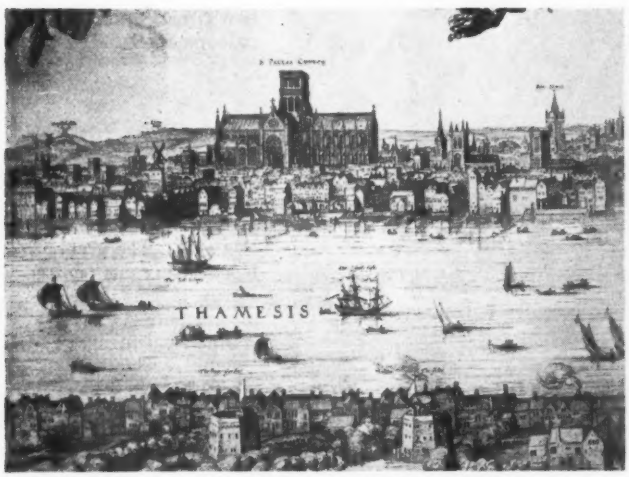


CAMBRIDGE A Contemporary air view

Walking up Trumpington Street as it widens into King's Parade the whole scene looks a set piece, with the beautifully sited chestnut tree in front of the Chapel completing a rich composition. Until one glances back from the Senate House it is not apparent that the eastern flank of King's Parade was originally a street, the opening up of which was not completed until the 19th century.

From Richard Lyne's map, 1574.

The creation of King's Parade in fact took several hundred years to achieve. Lyne's map shows King's College Chapel completed but entirely cut off from the medieval High Street.



LONDON From Visscher's drawing, 1616.

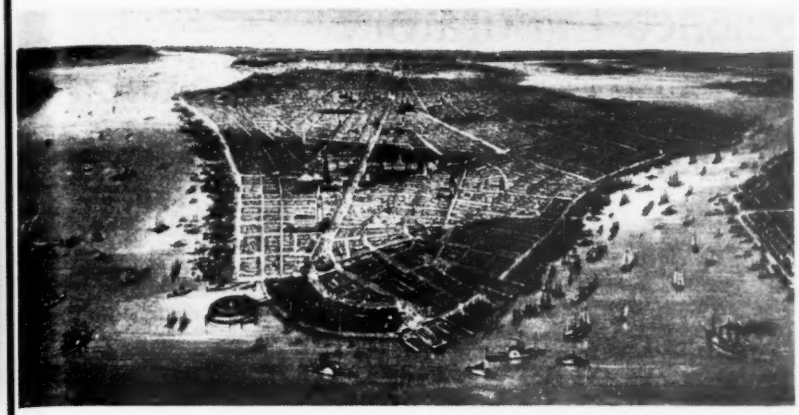
A view of London before the Great Fire of 1666. Old St. Paul's is without its steeple, which had collapsed some time before, but nevertheless stands high above the medley of churches, guild halls, and merchants' houses surrounding it. The predominantly wood frame construction of most of the buildings kept their height low and gave a richly articulated skyline as seen from London's most important traffic artery, the Thames.

A contemporary view

The urban scale and character has changed radically for the second time since Visscher imagined his view from above Shakespeare's theatre. After the Great Fire St. Paul's was rebuilt to approximately the same scale, but the Renaissance building controls and techniques gave a completely different character to the city. Then, during the 19th century, the majority of the buildings were rebuilt for more selected purposes and to a much larger scale.

The Time Dimension

NEW YORK



Manhattan in 1851

Manhattan in 1951

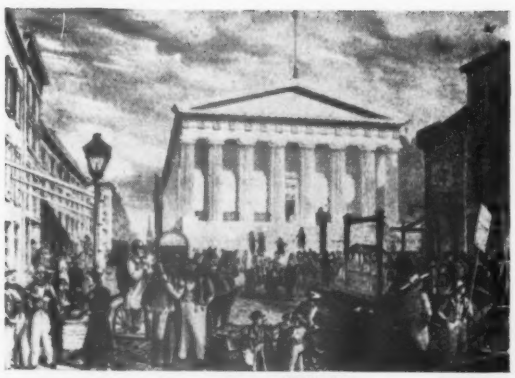
MANHATTAN IN 1851. The original scale relationship between streets and buildings.

MANHATTAN IN 1951. The same street pattern but both character and bulk of buildings have changed radically.

MANHATTAN FROM THE DOCKS. Here three scales of buildings can be seen, corresponding broadly to technological development in the 18th, 19th and 20th centuries. Development was essentially uncomprehensive especially in that the street pattern failed to change with the buildings.

BROADWAY. *below:* The changes in scale are strikingly portrayed in these three photographs where an important public building practically disappears in the jungle of unplanned urban growth.

Manhattan from the docks



Broadway

The Architectural Science Laboratory

by Henry J. Cowan, M.Sc., Ph.D., A.M.I.E. Aust., A.M.I.Struct.E., A.M.Am.Soc.C.E.

Professor of Architectural Science, University of Sydney

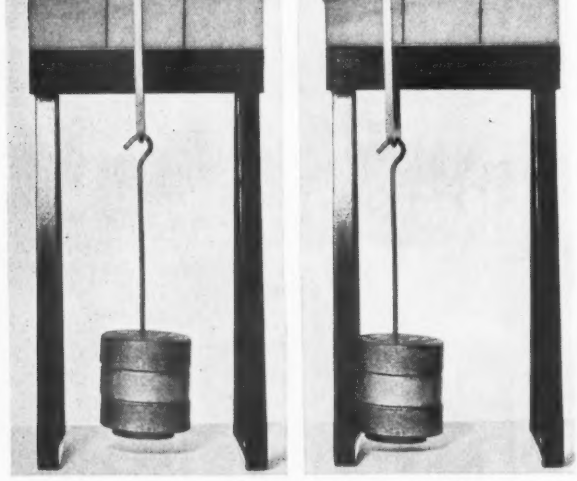
The Architectural Science Laboratory of the University of Sydney, showing the main structural models section

EIGHTEEN YEARS have passed since the Education Committee of the Architectural Science Group published its report on 'The Place of Science in Architectural Education'.[1] The Committee reported then, *inter alia*, on the need for including a considerable amount of laboratory work to support the scientific and technical lecture courses in the curriculum, and stated that 'no single development would so strongly and soundly affect the students' attitude towards scientific ideas'. The Committee's report is a challenging, if perhaps a controversial, document, and the arguments advanced in it have lost none of their force.

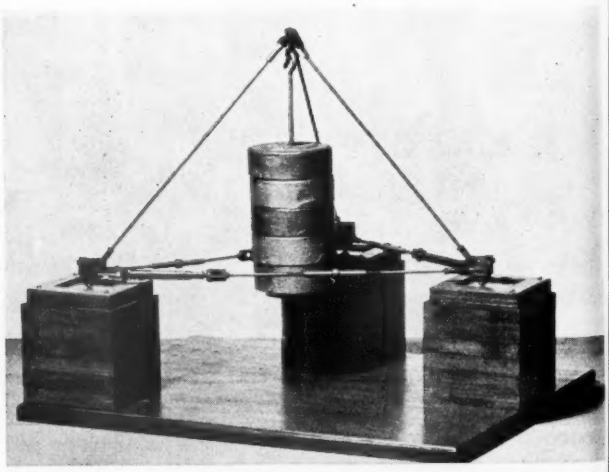
Taking structures as an example, we find today students introducing into their designs structural forms which are so complex that they are not included in the undergraduate civil engineering curriculum; engineering schools will explain on inquiry that these forms must be regarded as falling within the scope of postgraduate courses because of the advanced mathematical methods required. Clearly no conceivable revision of the mathematics courses in architectural schools would enable us to discuss these structures on a purely theoretical basis. Yet students are entitled to expect guidance from the teaching staff on the use of complex forms just as much as if they used the older and simpler steel and concrete structures.

It may be assumed that the architect calls on a structural consultant for all but the

[1] The First Report of the Education Committee of the Architectural Science Group of the R.I.B.A. Research Board, R.I.B.A. JOURNAL, Vol. 48 (1941), pp. 133–144.



Model illustrating that a block loaded inside the middle third is purely in compression, but that tension is induced over part of the joint when the load acts outside the middle third. This model is used for demonstration only



Experiment on a simple space frame. Students are required in their third year to determine the forces in the frame by means of spring balances and turnbuckles, and then check the result analytically with tension coefficients

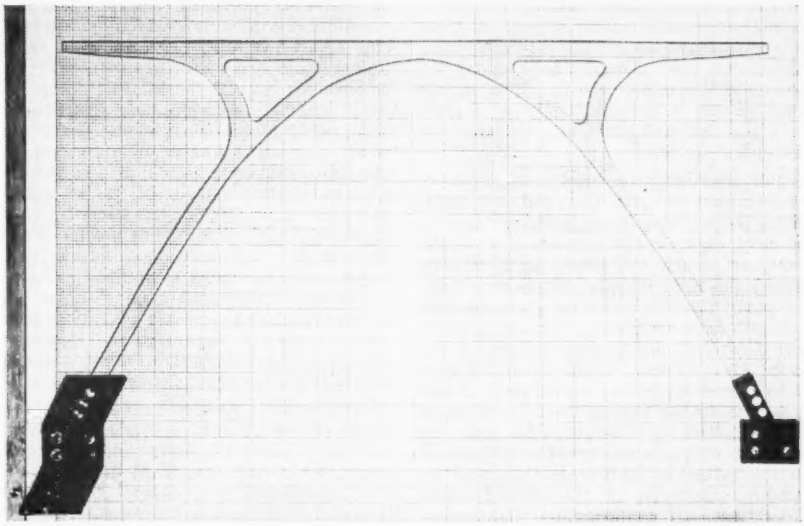
simplest structural work, so that he needs to understand structural principles only in general terms, the determination of structural sizes being the task of the consultant. It may also be assumed that the average architect is receptive to visual demonstrations, but that he does not respond well to mathematical treatment.

The exclusive use of computations in the structural courses of the architectural curriculum is therefore clearly unhelpful. A structure is in fact a physical concept, which can be explained in terms of mathematics. It can also be explained, often more simply if not with the same degree of precision, by means of a structural model. A much more extensive use of experimental methods is therefore indicated.

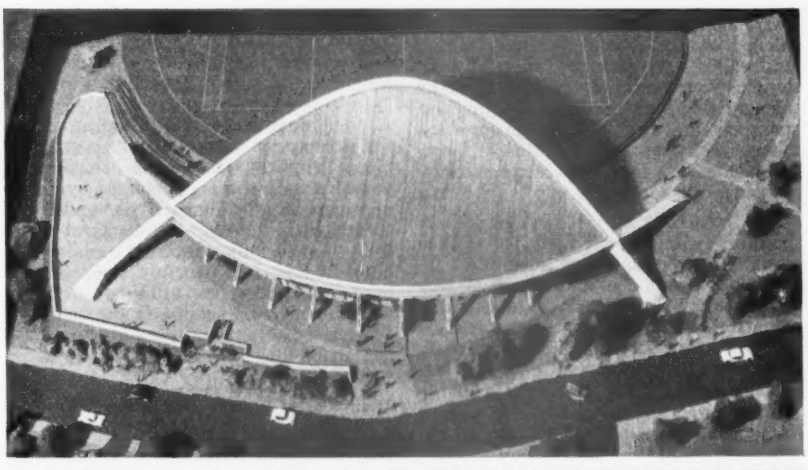
While a model demonstration during a lecture or a studio discussion is helpful, it is important that the student should himself perform an experiment and report on it if he is to derive the full benefit. The mechanics of a complex structure is not easily grasped, and the student will not understand the implications of the problem until he is required to solve it for himself.

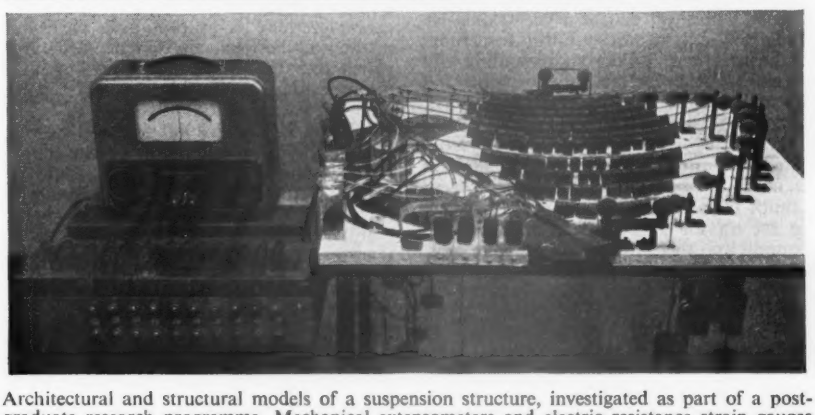
Structural subjects usually occupy more time than other scientific courses in the architectural curriculum, and present some of the thorniest teaching problems; for this reason they have been discussed at some length. The experimental approach is, however, helpful in most other branches of architectural science. Students gain a clearer appreciation of the properties of building materials by performing the more important tests on them. Sunlight penetration, which requires complex trigonometry for analytical treatment, is readily understood with the help of a model, and the same applies to many problems of illumination, acoustics and thermal insulation.

Solarscope with model featuring horizontal and vertical louvres. Students are required in their fourth year to investigate the efficaciousness of various types of shading devices



A Perspex model of a rigid arch with two integral cantilevers. By vertical, horizontal and angular displacement of one of the supports the thrust, shear and bending moment in the structure can be determined. This is a fifth-year experiment





Architectural and structural models of a suspension structure, investigated as part of a post-graduate research programme. Mechanical extensometers and electric resistance strain gauges were used for stress measurements. Prior to the structural analysis, the forces acting on the structure due to wind were determined in the wind tunnel of the Aeronautical Engineering Department

In spite of the advantages of the experimental approach in teaching the scientific subjects of the architectural course, comparatively few schools have provided adequate laboratory facilities. The experience gained at the University of Sydney over the past five years may therefore be helpful.

Our architectural science laboratory was established towards the end of 1954. Students perform individually an average of eight experiments in each year of the five-year course, so that each student carries out approximately 40 experiments. Since structural courses are given in each year of the curriculum, structural experiments are included in the programme for each year. These range from simple experiments on beams and trusses in the first year to the experimental analysis of complex structures in the fifth year. In addition simple experiments on physics are carried out in the first year, tests on the building materials in the second year, experiments on acoustics and lighting in the third year, and experiments on the properties of soils and on building equipment problems in the fourth year. In the fifth year students are required to undertake a brief investigation on a special problem.

All these experiments are specially designed for architectural students. Routine standard tests are excluded from the programme. We emphasise the importance of understanding the principle underlying the experiment, and do not aim at high accuracy in the numerical answer. Most of the equipment is very simple, and we make it in our own workshop.

The existence of a workshop and laboratory within the Faculty of Architecture affords a number of advantages. It is possible to conduct laboratory classes specially suited to the needs of architectural students. Demonstrations can be readily arranged during lectures, and the models are available to explain structural and other problems arising in connection with studio exercises.

It may be appropriate to mention that the establishment of a separate architectural science laboratory is not a very expensive undertaking. It requires a full-time member of the academic staff of senior standing who is experienced in laboratory work and research methods, and preferably some junior staff with similar experience. At least one technician capable of making laboratory equipment and of working wood and metals is needed, since most of the equipment cannot be bought. A small workshop can be set up for approximately a thousand pounds, and this can be used to make most of the laboratory equipment over a period of a few years. A small room is needed for the workshop, and one or two larger rooms with suitable benches for the laboratory. If the laboratory classes extend over five years, and the classes are subdivided to reduce the number of students in the laboratory at one time, the rooms will be in almost daily use throughout the session.

It is very desirable that the laboratory should also be used for postgraduate research. It is difficult for scientific teaching staff to keep in touch with the latest ideas unless some original work is in progress which goes beyond the level of comparatively routine undergraduate instruction. The postgraduate programme helps to train a small number of architects in research methods, who will in time form a research-minded nucleus of trained architects, able to apply the latest scientific ideas to professional practice. The results of the research may well make a notable contribution to new knowledge, even though a small university laboratory cannot hope to achieve results comparable with those of a major research organisation. Research students will also be able to assist with the running of laboratory classes.

In all but the largest schools postgraduate research is likely to be restricted to one or two narrow fields. Unlike the undergraduate laboratory classes, this work needs precision equipment and expert knowledge. However, it is reasonable to assume that the work in different schools would cover a range of subjects, so that this specialisation is not unduly restrictive.

Although scientific research is not ordinarily a field for postgraduate architectural study, there are many topics in architectural science to which useful contributions are more likely to come from architects, because of their broad training, than from scientists or engineers. We have selected the study of architectural structures for our present postgraduate programme. General information on the behaviour of new structural forms is obtained by means of experimental stress analysis,[1] and this is correlated with other architectural problems to yield information on architectural potentialities of the structure. Four students have so far undertaken full-time laboratory work in this field leading to the degree of Master of Architecture, and two have completed their research.

It is the most important function of the architectural science laboratory to impart a feeling of realism to architectural science teaching, and to demonstrate its essential unity. Taking again structures as an example, there is at present a clear cut distinction between the simple structures which the student can calculate but finds uninteresting; and between the more complex structural types which he likes to employ in his designs but whose theory he does not understand. The structural model will demonstrate the physical concepts of these structures, and the essential similarity of structural solutions of widely varying mathematical complexity.

Acknowledgement:

The equipment illustrated was made in the workshop of the Department of Architectural Science and the photographs were taken by the Department of Illustration of the University of Sydney.

[1] ARCHITECTURAL SCIENCE REVIEW (Sydney), Vol. 1 (1958), pp. 21–30.

Correspondence

THE SMALL HOUSE COMPETITION

The Editor, R.I.B.A. Journal

Sir,—You may have heard and seen the programme 'Panorama' on B.B.C. Television on Monday 31 August, in which a magazine was blatantly mentioned in connection with new types of plans and models of houses, which it was stated can be obtained, presumably through the publishers of the magazine, at a cost of 15 guineas. In the programme an architect was interviewed and appeared to condone this with the blessing of the R.I.B.A. which he mentioned.

Surely it is most irregular for the B.B.C. and also would seem to be completely and utterly against the principles of architects' institutes and the rules and regulations concerning professional practices, advertising and the like.

It would seem that through the magazine concerned, architects can now advertise and sell plans at a cut price in lieu of the proper professional charges which architects are supposed to charge under penalty.

It is a known fact that we as architects are not allowed to advertise or 'tout' for work and are supposed to charge fees as laid down by the institutes—it would therefore seem quite incongruous that this blatant advertising at cut fees should be allowed.

If this kind of thing is allowed to go on it makes the profession of an architect a laughing-stock and our institutes should put a stop to it to safeguard the profession and its proper fees or else architects should be blatantly permitted to advertise and obtain work in any way they can.

The profession is supposed to be classed on a similar basis to that of solicitors, doctors, etc., and as such should have the same treatment on B.B.C. Television programmes, where names even of medical men when being interviewed are always suppressed.

This matter should be reviewed very seriously by the Councils concerned with our profession, also efforts should be made to have a law passed through Parliament stating that all buildings of any nature whatsoever should be designed by a qualified architect.

Yours faithfully,

JOHN S. HOUGHTON [*L*]

THE SEPTEMBER COVER PICTURE

Dear Sir,—Is it necessary to splash this latest revolting piece of architecture by Corbusier on the front cover of the September JOURNAL?

It looks rather like a Coal Sorting Depot designed by a structural engineer for the Coal Board.

Yours faithfully,

E. B. REDFERN [*A*]

'La, tout n'est qu'ordre et beauté, Luxe, calme et volupté'

Perception and Modular Co-ordination

by Christopher Alexander

THE USE of geometrical or arithmetical systems to provide internal order in buildings was favoured by the Greeks, by the Renaissance Italians, and even, if we are to believe Mr. Lesser, by the Gothic masters. The conviction that an order of this kind plays a major part in producing the experience we call beauty, is a deep-rooted one.(1)
The conviction has, however, never been dissociated entirely from mysticism and tends either to be rejected altogether by 'reasonable' people for its air of black magic, or to be countenanced for quite the wrong reasons by the mystically inclined.

It will turn out, I hope, that it is possible to accept the conviction with some confidence, but for good reasons instead of bad. Our inquiry will of necessity be humble—since work is almost never done in this field, and there are no secure foundations. But the problem can be discussed, if we think clearly and get rid of the confusion that besets it.
We shall deal with it as follows:

1. We shall consider this generally accepted view, that order is visually desirable; discuss the view in the light of recent theories of perception, and indicate how the view might, in fact, be justified.
2. We shall examine the cult of the golden section; and show that the claims made for it are in large part exaggerated—that the order this system *does* provide can be provided just as well by countless other systems which are only less well known because no attempt has been made to mysticise them, to make religions of them.
3. We shall see that the golden section and other current module-centred systems are particular cases of a *general* system—which may indeed be connected with the facts of perception as we understand them. We shall develop this general system, and make it workable.
4. Finally we shall see that this general system is, as it happens, closely connected with modular co-ordination—that technology, in fact, is developing a system that is intimately related to ours. We shall discuss ways in which these two systems, one the result of technological discipline, the other of a theory of visual order based on perception, can be used conjunctively.

Visual order is taken to be some quality in the patterns that make up a building. (We see patterns wherever the components of which the building is made are visually distinct.)
First, then, we are interested in the part played by such visual order in the experience of someone who finds a building beautiful. Whatever we find, it is never going to be responsible for a great deal of the experience—structure, materials, space enclosed, are all much more important.
But it does play its part. And it is this part that we are interested in.

Before we can go any further we must be entirely clear about our use of the word 'order'.
When one of Mondrian's paintings, for example, is said to possess a high degree of order it is not at all clear what is meant. 'Order' is used much as 'excellence' might be—it tells us hardly more than that the painting is a good one of a certain sort. (This is not to say that Mondrian's paintings are *not* ordered. Only that their order is too elusive for us to understand it; we are too stupid yet, perhaps, to see just what it is.)
In this discussion we shall only use 'order' where we can give the word operational definition, where we can *point to* the order, where we can say '*This* is what makes it ordered'.

The obvious meanings of 'order' refer to some kind of simplicity, symmetry perhaps, lack of complication, lack of distraction. It is not difficult to decide on an operational criterion according to which we can make up our minds whether to call an object ordered or not. Suppose we decide on some such criterion. Is it then true to say that those objects that are 'ordered' are easier on the eye than those that are not 'ordered'? And if we *assume* this to be the case, is there anything in the mechanics of perception that justifies the assumption? Or, to put the question another way, is there anything about objects that are ordered that might lead us to expect them to be visually satisfactory?
We must admit right away that there is no conclusive evidence one way or the other. But there are some indications.
All three theories of perception that we shall examine (and they are among the most important current accounts), have this in common: they maintain that seeing involves an effort, and that the perceptual mechanism works in such a way as to minimise this effort.
It is no great step from here to the answer we want. For if the object being seen is simple (or 'ordered'), the effort that the mechanism needs to make is particularly small—and the situation is, from the point of view of the lazy brain, *satisfactory*.

The gestalt account of perception is ruled by the principle of isomorphism. (2)
The theory suggests that whenever an object is perceived, its form re-occurs somehow in the nervous system. That is to say, the form of the physiological configurations in the brain is isomorphic to (structurally analogous to) the form of the object.
This explains, for instance, why ambiguous figures are always seen in the simplest possible way—the brain seeks to organise itself in the least complicated fashion, so a trapezium is not seen as a trapezium in the frontal plane, but rather as a rectangle in perspective.
And it is quite clear that in terms of this account an 'ordered' object will allow the brain more rest than a complicated one. If the object itself is simple, so will the situation in the brain be—and the state of affairs in the perceptual mechanism will be satisfactory.

In Hebb's account of perception the ruling idea is one of aggregation.(3) There is no overall or field theory, but instead, the suggestion that we see figures as the result of a complicated learning process which goes on through cell assembly in the visual cortex.
The basic assemblies are formed very early in our seeing life, and later we combine these basic ones in order to see more complicated patterns, possibly adding still further cells.
Again, it is the simplicity of the figure that gives the brain an easy job. If the brain can use a particularly small set of basic assemblies, and does not need to add further cells to them, there will be a low level of activity in the visual cortex—the figure will be easy on the eye.

The information theory account, given by Attneave, is most interesting.(4) Most patterns are highly redundant, in respect of the information they give. Thus, if we describe the visual field in terms of a minute grid, each square of which is monochromatic—like the grain of a photograph—and if we tell somebody the colour and tone of these tiny squares one at a time, not all our information will surprise him. In the case of a simple pattern he will anticipate the colour and value of most of the squares we come to (as soon as he realises what pattern it is that we are describing, he will know the values of *all* the remaining squares), while with complicated patterns he may be kept guessing most of the time. The complicated pattern is said to contain more information than the other—in fact, the number of errors he makes in predicting future squares is an index of the amount of information carried by the pattern. Attneave implies that each error costs the observer an effort, so that simple patterns, which carry less information than complicated ones, cost him a smaller effort than the complicated ones.
Again then, a pattern that is 'ordered', since it costs the brain less effort than others, is more satisfactory to the eye.

Each one of these tentative 'explanations' of the fact that ordered things are more apt to please the eye than others depends on the fact that the brain (or eye, if you prefer) is lazy.
And, of course, this view is not unarguable. There are ways in which just the contrary seems to be true—where it is suggested that the eye has to be kept *busy*.[5]
Goodyear's account of the refinements of Greek and Egyptian architecture suggests that the architects of these periods used entasis and similar devices, not to correct optical illusions, as is so often thought, but to achieve something positive.

To see lines that are curved as straight, or unequal intervals as equal, the brain has to make compensatory efforts, and strain itself far more than when it sees *equal* intervals as equals. It may be that this very effort is pleasurable, and that the refinements titivate the eye and keep it happy, so to speak.

And there is certainly something to be said for this idea.
But it does not exclude the other, and much older view, that simplicity rests the eye and is therefore beautiful.
Many, many societies have held this view—and of them, many made it into some kind of system. Both in Japan and India, for example, it has long been regarded as important.[6]
In Europe the idea has been several times attached to the whole of religious thought. The Greeks, the Gothic builders, and the Renaissance scholars, all valued some such theory (though possibly it was no more than a desire to simplify measurement that made it attractive in the Middle Ages); and now, at the moment when hope of understanding visual aesthetics is just appearing, the architectural world has been inundated by further mysterious writing on the golden section and geometry. Instead of trying to account for the effect of order in a way appropriate to our time, the majority of writers have returned to an almost primitive acceptance of magic and ritual.

Those that have promoted this return to the golden section are, unfortunately, often distinguished enough in their own fields to make it inconceivable that they should be mistaken. The absence of even the beginnings of careful analysis in this subject is attributed, not to the inability of its exponents, but to the nature of the subject itself.

Yet we have only to examine the work in detail to see how flimsy its foundations are. The failure of writers to appreciate the true reason for the visual efficacy of the golden section has led them to shelter in a maze of obscurity. It is clear from their whole approach to the subject, and from the vagueness of their so-called proofs and demonstrations that they themselves are quite uncertain—that they are unable to account adequately for the facts.
Let us examine some of these 'proofs'.

First of all, throughout the writings we are concerned with, there seems to be deliberate intention to hoodwink the reader. While this *need* not have any bearing on the value of the idea itself, we cannot help wondering why it is so common; whether it is not, in fact, because the only way to prove things that are incorrect *is* by false argument. Or perhaps it is simply that the writers are too ignorant to know what they are doing. Le Corbusier, for instance, reverently reproduces facsimiles of two pages of arithmetic a mathematician did for him.[7]
The arithmetic involved could have been done by many schoolboys, and to suggest that it is difficult by showing readers the original manuscript is sheer deceit.
Similarly, Matila Ghyka glibly invokes Ockham's razor at a point where the razor principle has no application and does not in any way help the idea which he intends it to support.[8]
Its use is a pretence.
Another attempt to hide behind mathematics and impressive words is made by Jay Hambidge when he explains his devotion to the golden mean by saying that it is a dynamic ratio rather than a static one.[9]
He means, it later turns out, that the dynamic ϕ is an irrational number like $\sqrt{2}$ or π, while the static numbers are integral fractions.[10] Now, although there is no harm in putting this forward as new terminology, it is senseless to describe the difference as significant when discussing the way people react to patterns.

The irrational numbers make no sense as physical lengths. Physical lengths, which are by definition commensurable, must not be muddled with numbers that are entirely abstract.
Think of this another way: as regards physical lengths, since there can be no irrational ones, it makes no sense to distinguish between 'static' and 'dynamic' ratios. There is NO way in which this might be done, since there is always a rational number as close as you like to any irrational one.

Even disregarding this logical point (vital though it is), the business is *still* absurd. The limitations of visual acuity make nonsense of it. In general, people cannot distinguish between two rectangles whose height-breadth ratios are 6 per cent apart. That is to say, if we have two rectangles, one a by b, the other a by $1{\cdot}06b$, observers cannot tell one from the other.[11]
Thus, though observers can distinguish between a square and a ϕ rectangle, and even between a $1 : 1{\cdot}5$ rectangle and a ϕ rectangle, the $1 : 1{\cdot}66$ rectangle and the ϕ rectangle are visually the same. For an exceptionally acute observer we might need to make the difference finer—but the point remains. When we see, we see, not a rectangle with the mathematical properties that $(1 - \sqrt{5})/2$ has, but a shape whose sides are in a ratio somewhere between $1{\cdot}6$ and $1{\cdot}65$. (Fig. 1.)

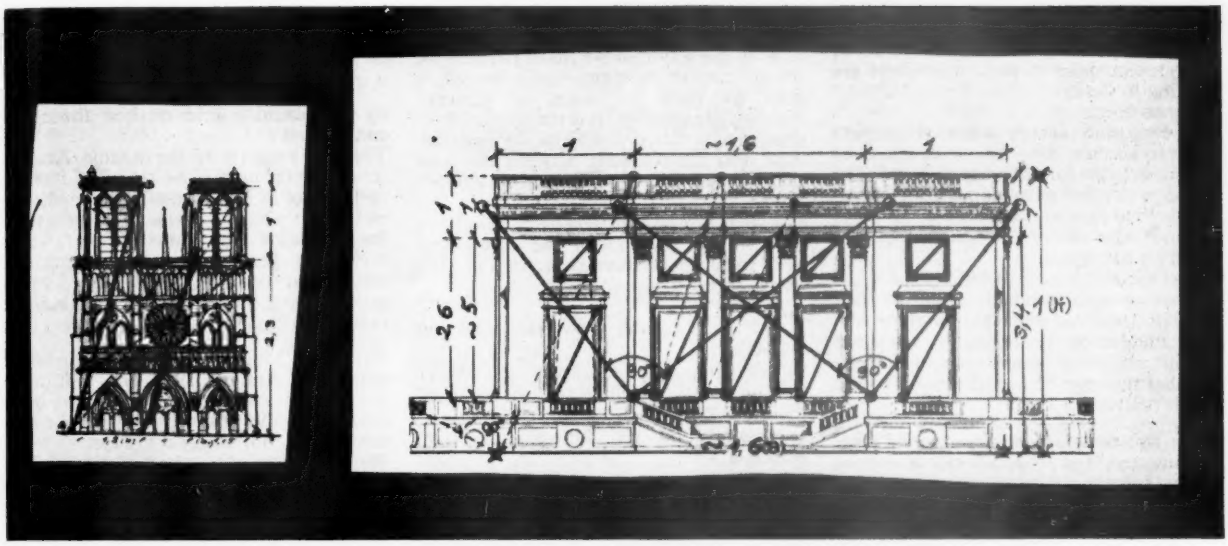
To make distinctions between rectangles whose ratios are static and rectangles whose ratios are dynamic, is to befuddle ourselves.

Closely related to the facts of visual acuity is another favourite device of golden sectionists. We are confronted with (and convinced by) analyses consisting of hundreds of lines ruled across plans and elevations. (Fig. 2.)
Now both the lines of the analsyis, and the beadings, mouldings, frames, etc., of the object itself, are so thick (in relation to the object's overall dimensions), and the intersections can be so variously made, that any consequent deductions and results are valueless. (Fig. 3.)
A perfect example of the way in which line thickness variations can be used is the famous 'paradox' of the rectangle and the square. The first, consisting of 65 unit squares, appears to be made of the same elements as the second, which contains only 64. In fact the lost unit is taken up by the area of a line—but imperceptibly, because the lines are all thick enough to cover the deceit. (Fig. 4.)

But the fact that line analyses prove nothing does not daunt the mystic. He has far more impressive evidence for the uniqueness and special qualities of the golden mean.[12]
The occurrence of the golden mean in nature. The Fibonacci series and the geometrical figures associated with it, pervade, so it would seem, the world of natural forms. And this is taken to be a clear indication of the mystical qualities of ϕ.
It is true that we find pentagons, five-petalled flowers, equiangular spirals, serial arrangements of leaves on branches. (Fig. 5.) But all these patterns are governed by the way in which they have been made. They are not the result of nature striving for some high ideal—simply the outcome of a certain kind of growth.[13]
No more remarkable than the fact that the two halves of a dicotyledonous seedling are the same—it is a result of the way these plants develop. This was made clear as early as 1872, when it was pointed out that unless we can give literal sense to the idea of a plant 'aiming at something', the idea is absurd.[14]
Yet almost 100 years afterwards we still find people writing as though nature uses the golden section in order to be harmonious.[15] The numbers actually found in nature (ratios like 5/8, 3/5, 2/3, 1/2), are not at all close to ϕ, while those that *are* close to ϕ (3/21, 89/144, and so on) are never found.
ϕ itself plays no part in natural growth; but the first few members of the Fibonacci series, and the structure of this series, do picture the serial growth of certain forms. This is not mysterious in any way. And what is more, there is no reason (except a Platonic one) to consider the series particularly significant. The fact that it is associated with a certain principle of growth says nothing about the visual effects of the results. Nor should it dictate anything to us as formbuilders—unless the ways in

Fig. 1. We can barely distinguish between these two rectangles, one 1: 1·6, the other 1: 1·65. →

Fig. 2 below. From *The geometry of art and life*, by Matila Ghyka.



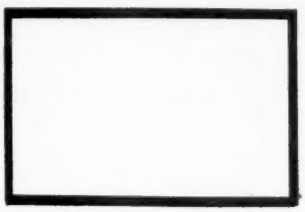
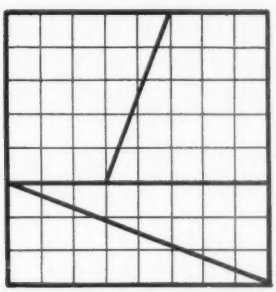


Fig. 3. The inner rectangle is 1: 1·57.
The outer rectangle is 1:1·51.



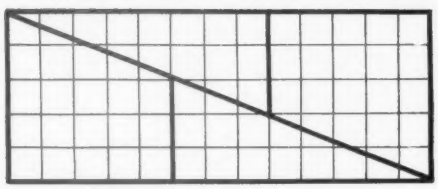
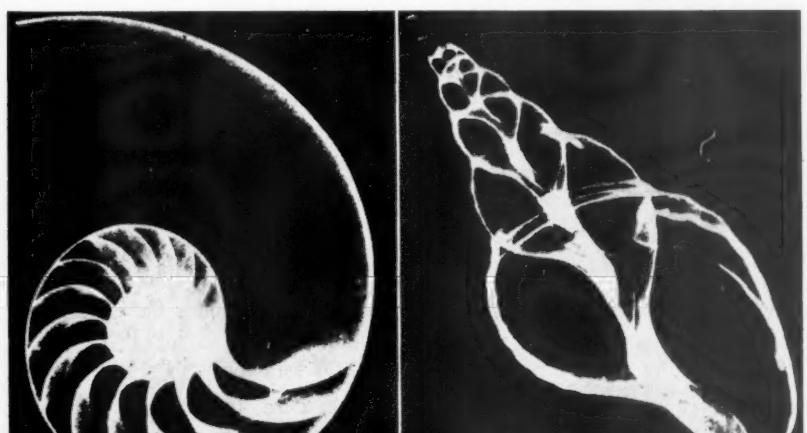


Fig. 4.



← **Fig. 5.** From *The geometry of art and life*, by Matila Ghyka.

Fig. 6. Given any two rods from the collection, their sum also belongs to the collection.

which we made forms were based on the same principle. And they are not.

A further, quite different, example of confusion is to be found in all the statistical experiments on the golden mean.
A number of rectangles, among them a ϕ rectangle, are shown to people who are asked to say which is the most pleasant.[16]
Often it does turn out that the ϕ rectangle is preferred by the largest number of people—which shows that, within very broad limits (owing to the bounds of visual acuity), rectangles of about this shape are pleasing to the eye.
So far so good.
The confusion occurs when efforts are made to account for this attractiveness by appealing to the formal properties of ϕ (like $1 + \phi = \phi^2$, for example). The 'reasons' of this kind that are offered are far more obscure than the phenomenon they are called on to explain.
In fact the situation is as follows.
1. It is an unaccountable empirical fact that *this* particular shape pleases the eye.
2. A number of rectangles have certain formal properties which account for the fact that they can be nested to form rather simple patterns.

These two facts are, as far as we know, unconnected. The second does not explain the first (except in a disorderly and mystical fashion), and moreover there are all sorts of rectangles that can be nested—the property is not confined to the ϕ rectangle, as it would need to be if there *were* any connection between 1 and 2.
However, these nested patterns *are* visually agreeable, for a different reason. They please the eye, not because of any special shape associated with them, but more probably because they are *ordered.*
Now what is it we mean when we say that they are ordered?
What is it such nested patterns have, which other patterns do not?
What are the special characteristics of order?
There is a lack of confusion.
A certain simplicity.
Relations between the parts.
These are the traditional ways of defining order, aren't they? Let's not scorn them, but try to see what the definitions say.

Essentially a pattern of this kind is characterised by the lengths of the lines that make it up. Imagine yourself making such a pattern from a number of straight rods. If all the rods were of the same length, the pattern would have a very obvious character, and an obvious kind of order too. If there were two lengths of rod available, the pattern would be characterised by the ratio of the two lengths. And so on up. It is the relation between the various rods you play with that gives the pattern you produce its character.
Or think of starting at the other end: if you were allowed rods of as many different lengths as you liked, and used a great variety, the patterns you produced would have no order at all—over and above their rectilinearity. Gradually, as you reduced the number of different lengths, the patterns would grow clearer and clearer. Rectangles of similar shape would begin to appear, the relations between parts of the pattern would become apparent.

If you are making rectilinear patterns of this kind, the number of different rods, and their respective lengths, are the only variables—they are the only things you can change.
It is in this way that we make patterns on the surfaces of buildings—only instead of rods we have the edges of adjacent building components. It is the sizes of these components that characterise the patterns. And it is the relations between the sizes that is responsible for what we have called 'order'.
But what do the relations need to be; just how should we control the component sizes so as to produce order of the kind that is effective, visually?

We can't, of course, answer this question altogether.
But we can suggest an answer—an answer that turns out to explain the efficacy of all the order systems in current use.
It depends on the following additive principle.
Think of the set, S, of different component dimensions (in our example, the set of different lengths of rod). And give this set the property that if we take any two lengths from the set, the *sum* of these two lengths is also a member of the set.[17]
(If we take any two rods from all the rods we have, there is a third rod belonging to the collection, which has the same length as the other two put end to end.) (Fig. 6.)

We shall see first that this principle does meet some of the rather vague demands for satisfactoriness made by the accounts of perception we discussed:
The bits of the pattern will fit together in a way that minimises visual confusion.
Any length can be expressed in several ways as the combination of smaller lengths.
Combinations and their variants recur throughout the pattern.
Relations between different lengths will be apparent just on account of the frequency of their occurrence.
Bits of the pattern will appear several times, arranged and rearranged.
The relations between bits, and the reappearance of similar bits, will make the whole pattern easy to grasp, easy to recognise.
All these facts will contribute to the well-being of the lazy perceptual mechanisms. That is as much as we can say.

We cannot be certain that order is pleasing to the eye. But we believe it to be so, and the belief does not seem altogether foolish. When we examine order systems, we shall find that they have the property discussed, so we can say, at least, that *if* they are visually effective, it may well be on account of this property.

The two most prominent systems of recent years have been 'Le Modulor' devised by Le Corbusier, and the 3 ft. 4 in. and 8 ft. 3 in. planning grids used by the Hertfordshire school designers after the war. Both were concerned with the actual lengths that appeared in the building's components, so that, ultimately, these components might be standardised.
Both start with certain lengths, and base on them a set whose members fulfil the condition specified: 'That if any number of lengths are added together, their sum is also a length from the set.'

In the planning grid method the set is constructed as follows:
The basic length is M, the module. And the set of lengths used is the set of all integral multiples of M, which satisfies the condition, clearly. If we have a number of lengths from the set, each will be of the form nM, where n is an integer. Their sum, consequently, will be $(n_1 + n_2 + n_3 \ldots + n_K)M$, which is of the same form, and therefore belongs to the set also.

With the 'Modulor' the set is arranged differently. And we shall find that while its lengths satisfy the condition often enough for the relations between them to tell, they do not satisfy it always.
The set consists of lengths that are members of two interlocking Fibonacci series, the blue series and the red series, which we may denote by:
$B_1, B_2, B_3, B_4, \ldots$ and $R_1, R_2, R_3, R_4, \ldots$ where

$B_n + B_{n+1} = B_{n+2}$ . . . . . (*a*)
$R_n + R_{n+1} = R_{n+2}$ . . . . . (*b*)
$2R_m = B_m$ . . . . . (*c*)

Now twice any member of the red series does belong to the set, by virtue of identity (*c*). And the sum of two consecutive members of either series belongs to the set, by virtue of identity (*a*) or (*b*). But there are many combinations which lie outside the set, and sooner or later we shall be forced to use such combinations, as Le Corbusier himself has been forced to do.[18]

But, essentially, both systems are sets of numbers with what we have called the additive property—a property that can be written down quite simply:
S is a set of numbers such that if x and y both belong to S, then $x + y$ also belongs to S. It can easily be shown that such a set is uniquely defined by its lowest two members, a and b, say; and that all other members of the set may be expressed as linear combinations of a and b—that is, in the form $na + mb$, where n and m are whole numbers greater than or equal to zero.
Consider, for example, the following set:
7 11 14 18 21 22 25 . . .
This set, which fulfils the condition of additivity, may be defined by the pair 7, 11—for:
$14 = 7 + 7, 18 = 7 + 11, 21 = 7 + 7 + 7$,
$22 = 11 + 11, 25 = 7 + 7 + 11$, etc.
The set contains all possible linear combinations of 7 and 11.
It seems then, that the order produced by such a set is entirely dependent on a pair of numbers (lengths) a and b.

So we could equally well define the system by specifying a and r, r being the ratio b/a. And indeed, it is in this form that the theory proves most interesting, for, by giving the parameter r different values we can reduce the general system to particular ones, some of which we know already.

If we put $r = \phi$, or $b = \phi a$, and remove several members of the ensuing set of linear combinations, we are left with the double Fibonacci series of the Modulor.
The initial set is:
$a \quad \phi a \quad 2a \quad (1 + \phi)a \quad 3a \quad 2\phi a$
$(2 + \phi)a \quad (1 + 2\phi)a \ldots$. which,
since $1 + \phi = \phi^2$, $1 + 2\phi = \phi^3$, etc., we may rewrite as:
$a \quad \phi a \quad 2a \quad \phi^2 a \quad 3a \quad 2\phi a \quad (2 + \phi)a$
$\phi^3 a$ from which we select $a \quad \phi a$
$\phi^2 a \quad \phi^3 a \ldots$. and $2a \quad 2\phi a$
$2\phi^2 a \ldots$., which are Le Corbusier's red and blue series.

If we put $r = \sqrt{\phi}$ we arrive at the system underlying the ground plan of Mies' Farnsworth house. For here the set of linear combinations is:
$a \quad \sqrt{\phi}a \quad (1 + \sqrt{\phi})a \quad 2a \quad 2\sqrt{\phi}a \ldots$.,
which contains all the lengths that occur in the basic plan, not because Mies chose these lengths numerically, but because the plan is constructed in a certain additive way that has the same effect.

Finally, if we put $r = 1$ or $a = b$, we arrive at the familiar modular planning grid. The set of linear combinations is nothing more than:
$a \quad 2a \quad 3a \quad 4a \quad 5a \ldots$., the set of multiples of a single module a.

Each value of r, then, gives us a different system—each one a particular example of the general system we have proposed.

An aspect of these systems that we have not yet examined is their scale. We have said nothing of the units to be associated with such sets—for clearly we can assign any units we please to their members. They can be millimetres, inches, feet, miles. We must decide what sort of units will best achieve the purpose under discussion—that of making visually effective patterns.

a and b must not be too large—or the lengths would be too great for us to perceive the relationships between them. (Moving round a building, the eye most readily picks up lengths between 3 ft. and 10 ft.—the scale of windows, doors, panels, floor to ceiling heights, and so on.)
But what is not so clear is that a and b must not be too small either. This depends on the fact that the eye is only able to grasp a very limited range of relationships. We do not see 20 objects as 20, but as a large number. And we see no relation between a length of $19k$ and one of $20k$ (whatever the units). They appear simply as two almost equal lengths—the relation is too obscure for the eye to pick it up.
If our basic lengths were 4 in. and 7 in., for example, the set would contain: 4 in., 7 in., 8 in., 11 in., 12 in., 14 in.. 15 in., 16 in., 18 in., and every succeeding inch, so, as we have seen, the eye would notice no relations among the higher members of the set.
a and b will need to be as large as possible, therefore—of the order of three feet, probably.

The final choice of a and b will be determined by their HCF. (The HCF of 3 ft. and 5 ft. being 1 ft., that of 3 ft. and 5 ft. 4 in. being 4 in., that of 3 ft. and 4 ft. 10½ in. being 4½ in.)
When we select the set of linear combinations of a and b, we are in fact picking out certain lengths, which we believe will be visually effective in combination, from all the multiples of their HCF.
For, if this HCF is k, then:
1. *Any* member of the set is a multiple of k.
2. But the set does *not* contain all multiples of k.

It happens that modern technological theory is also based on a small module like our k, and we shall examine the possibility of making k the same as this manufacturers' module, which has been fixed, after considerable research, at 4 in. (approximately 10 cm.).[19]
In what follows it is essential to distinguish clearly between the two aspects of such a modular theory—between the economic approach of the manufacturer and the aesthetic approach of the architectural theorist. From the manufacturer's point of view it is desirable to provide the architect with as big a range of sizes as economics allow. The module is introduced only as a standard that will allow all the parts made by different manufacturers, in different areas, for different purposes, to be used successfully in conjunction with one another. Any interest the manufacturer has in selecting particular lengths from the set of multiples, is governed by his desire to cover the maximum number of modular spaces with the minimum number of elements. He will choose certain multiples of k (like our a and b), and find out what ranges of the set of all multiples can be covered by combinations of them. This problem has been examined recently, with the help of a well-known number theorem which states that *every* multiple of k above $(a - k)(b - k)$ can be expressed as a linear combination of a and b.[20]

The architect who wants to introduce some kind of visual order is concerned with almost the opposite problem. He is concerned with the lengths *below* $(a - k)(b - k)$.
The visual effect associated with a number pair and its set is powerful just because, below $(a - k)(b - k)$, we *cannot* cover all multiples of k with linear combinations of a and b. We can only cover a limited set of these multiples, and it is this very limitation that makes the pattern tell.

In spite of this difference the two views of the situation are quite compatible.
The 4 in. module is enough to make them so.

The manufacturer will select his component sizes on economic grounds, and then, for a particular building, the designer will choose *from these components* a set that has the restriction discussed. (a and b may be chosen from any of the components available—their HCF will always be 4-in., or a multiple of 4 in., because of the 4 in. module used by the manufacturer.)
In this way it will be possible to use the order principle.

The connection between perception and modular co-ordination that has been established could influence a practising designer, certainly. It could be made use of as a tool. But the connection was established, principally, in the belief that we should know what we are up to. And in the hope that it will increase our confidence in modular co-ordination.

It indicates that *if* the various technical organisations succeed in their aim, establish the 4-in. module, and the manufacturers adopt it, we shall be able to design, using this 4-in. module and the traditional principle of order.

And our faith in the visual order we produce will no longer need to be mysterious, but may be in some measure understood.

NOTES

(1) See, for example, Plato's, *Theaetetus, Timaeus, Philebus; Architectural principles in the age of humanism*, by Rudolph Wittkower, London 1952, throughout.
Gothic cathedrals and sacred geometry, by G. Lesser, London 1957.
(2) For this account see *Principles of Gestalt psychology*, by K. Koffka, London 1935; for its use in art criticism see *Art and visual perception*, by Rudolph Arnheim, London 1956.
(3) The account of D. O. Hebb is contained in his *The organisation of behaviour*, New York 1949.
(4) See *Some informational aspects of visual perception*, by F. Attneave, in PSYCHOLOGICAL REVIEW 61, 1954, pp. 183–193.
(5) This implication is found throughout the writing of W. H. Goodyear, as, for example, *Greek refinements*, Yale U.P. 1912.
(6) We find this in most writing on Eastern architecture: for instance—*India*, by Richard Lannoy, Norwich 1955, p. 8.
The lesson of Japanese architecture, by Jiro Harada, London 1936, pp. 45–51.
(7) *Le modulor*, by Le Corbusier, Boulogne 1950, pp. 233–234.
(8) *Geometrical composition and design*, by Matila Ghyka, London 1952, p. 7.
(9) *Dynamic symmetry*, by Jay Hambidge, Yale U.P. 1920.
(10) $\phi = \frac{1 + \sqrt{5}}{2}$ is the limit of ratios of consecutive members of the Fibonacci series.
(11) The result of some unpublished experiments done at the Building Research Station.
(12) See, for example, *The geometry of art and life*, by Matila Ghyka, New York 1946, Chapter 6.
(13) *Growth and form*, by D'Arcy Wentworth Thompson, Cambridge 1952, pp. 912–933.
(14) See a paper by P. G. Tait, PROCEEDINGS of the Royal Society of Edinburgh, VII, 1872, p. 391.
(15) See note (12). It is never put quite so naïvely, but the implication is always there.
(16) Such experiments were done, for example, by G. T. Fechner who reported them in *Vorschule der Aesthetik*, Leipzig 1876, pp. 190–202. More recently by T. R. Austin and R. B. Sleight, JOURNAL OF APPLIED PSYCHOLOGY, 35, 1951, pp. 430–431.
(17) This is the first and most important axiom that defines a *commutative additive group*, in algebra.
(18) To construct a satisfactory bay width at Marseilles, for instance, he adds 53 cm. to 366 cm., making 419 cm., which does not belong to either series. See *Modulor* 2, London 1958, p. 237.
(19) See *Modular co-ordination in building*, published by the European productivity agency, Paris, August 1956.
(20) *Geometrical aspects of modular co-ordination*, by J. W. Harding and L. S. Vallance, THE BUILDER, 27 Sept. 1957, pp. 552–555.

The Colonial Churches of Virginia

By Marcus Whiffen

THE FIRST CHURCH IN VIRGINIA was built within a year of the settling of Jamestown. Captain John Smith describes it, together with the makeshift arrangements for worship that preceded it, in a well-known passage:

> 'When I went first to Virginia, I well remember wee did hang an awning (which is an old saile) to three or foure trees to shadow us from the Sunne, our walles were railes of wood, our seats unhewed trees, til we cut plankes, our Pulpit a bar of wood nailed to two neighbouring trees. In foul weather we shifted into an old rotten tent; for we had few better, and this came by way of adventure for new. This was our Church, till we built a homely thing like a barne, set upon cratchets, covered with rafts, sedge and earth; so was also the walls. . . .'

The 'homely thing' was short-lived: it burned, together with the other buildings in the palisadoed fort, in 1608. Today the visitor to Jamestown may inspect a hypothetical reconstruction of it, erected in 1957 on the occasion of the 350th anniversary of the founding of the first permanent British settlement in America.

Fire and two wars have played havoc with Virginia's colonial buildings, and the churches have also had the results of disestablishment to contend with. The number of churches at the opening of the Revolutionary War has been put at 250; 44 remain. No single example of the churches of wooden frame construction, of which there were many, has survived; as for the brick buildings, the shingles with which their roofs were originally covered have generally given place to tiles or tin, and interior furnishings of the colonial period are rare. Yet the colonial churches of Virginia are still a more interesting group of buildings than is recognised even in America.[1]

In the Old Brick Church of Newport Parish, south of the James River in Isle of Wight County, Virginia possesses both the oldest and the most ambitious of the surviving 17th-century churches in the former colonies (Fig. 1). The most recently discovered evidence indicates that St. Luke's (as it was named in 1828) was quite possibly built as early as 1632, the brick quoins of the tower being an embellishment of the second half of the 17th century. The buttresses and stepped gables and brick-mullioned windows place it in the English Late Gothic tradition; the gables may be compared with those of the church of Woodham Walter, Essex, built in 1563, and the brick mullions with those at Sandon, dating from *circa* 1502, in the same county. The tower is an unusual feature: the tower of the first Chuckatuck church in Nansemond County (destroyed when the building was replaced two centuries ago) and that added to the brick church at Jamestown in 1699 (still standing, though ruinous) were apparently the only other 17th-century church towers in the colony, and it was not until 1740 that a fourth church tower was built, as an addition to St. Peter's, New Kent County (Fig. 2).

A vestry minute shows that the designer and the builder of the tower of St. Peter's were one and the same man, a certain William Walker. When a new church was to be built the vestry might use the columns of the VIRGINIA GAZETTE to invite the simultaneous submission of plans and estimates. For example:

> 'The Vestry of *Overwharton* Parish, in the County of *Stafford*, having come to a Resolution to build a large brick Church, of about 3000 Square Feet in the Clear, near the Head of *Aquia* Creek, where the old Church now stands. Notice is hereby given, That the Vestry will meet at the said Place, to let the same, on *Thursday* the 5th Day of *September* next [1751], if not the next fair Day. All Persons inclinable to undertake it are desired to come then, and give in their Plans and Proposals.'

In this case, as it happened, the church was burnt down when it was all but ready to hand over to the vestry, and the contractor-designer, whose name was Mourning Richards, after an appeal in the VIRGINIA GAZETTE 'to all charitable and well-disposed Christians' to help him and his family in their 'very great Distress', built it all over again (Fig. 3).[2]

But if many of the churches of colonial Virginia were both designed and built by a master of one of the building trades—which owing to the scarcity of stone in the Tidewater region nearly always meant a carpenter or a bricklayer—the church that had the greatest influence on the architecture of the colony was designed by quite another sort of person. This was the second brick church of Bruton Parish, at Williamsburg, and its architect, as the documents show, was Alexander Spotswood, Lieutenant Governor of Virginia from 1710 until 1722. Bruton church, as it stands today (Fig. 4), is considerably larger than it was as built to Spotswood's design in 1712–15; for the chancel was extended 23 ft. in 1752 and the steeple was added, to the design of the carpenter Benjamin Powell (who also built it), in 1769. Originally it was a tower-less building on a Latin cross plan; its dimensions were regulated (as I have shown elsewhere)[3] by a tight-knit mathematical system of proportion which is the less surprising because Spotswood was a keen amateur of mathematics. Very few cruciform churches had been built in England since the Reformation. At Williamsburg, which had been

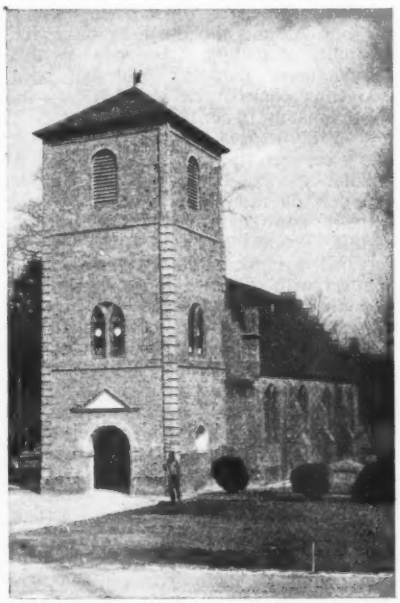


Fig. 1: St. Luke's, Isle of Wight County, Virginia. Perhaps built as early as 1632; the oldest remaining church in former British America.

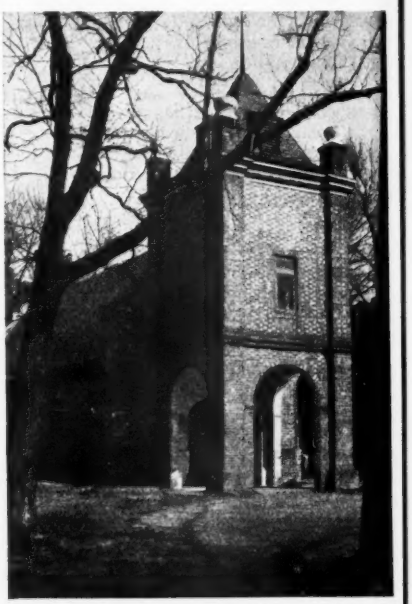


Fig. 2: St. Peter's, New Kent County, Virginia. The tower, added in 1740 to the nave of 1701

[1] Easily the best book on the subject is G. C. Mason, *Colonial Churches of Tidewater Virginia* (Richmond, Virginia, 1945). Unfortunately Mr. Mason did not live to publish the promised second volume, which would have completed this detailed survey. S. P. Dorsey, *Early English Churches in America, 1607–1807* (New York, 1952), is useful for an introduction to the ecclesiastical history of the colony and a list of surviving buildings.

[2] The quoins, keystones, and doorways, for which a mason called William Copein was responsible, are of the local Aquia Creek stone, with which the United States Capitol in Washington was originally faced.

[3] *The Public Buildings of Williamsburg, Colonial Capital of Virginia*, by the author (Williamsburg, 1958).

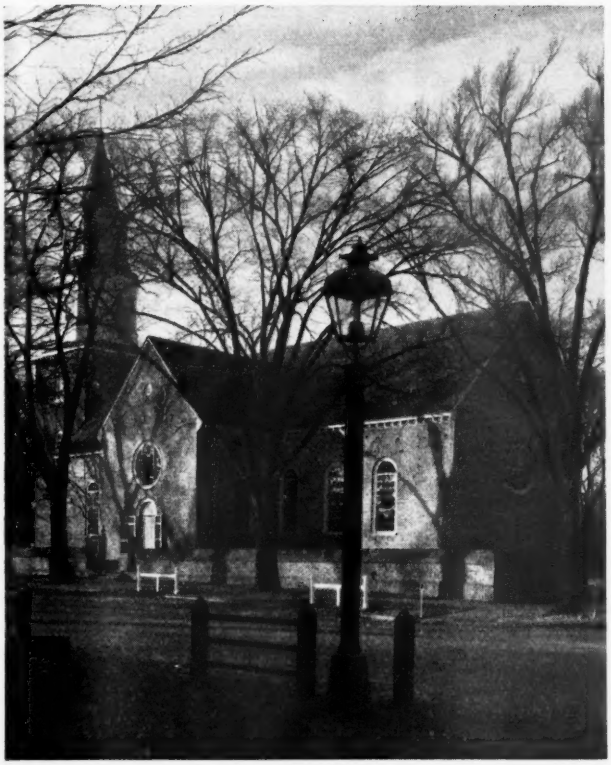


Fig. 3

Fig. 3: Aquia Church, Stafford County, Virginia, 1751–57

Fig. 4: Bruton Parish Church, Williamsburg, Virginia. Built to the design of Governor Spotswood in 1712–15; the chancel extended eastward in 1752; the steeple added in 1769.

Fig. 4

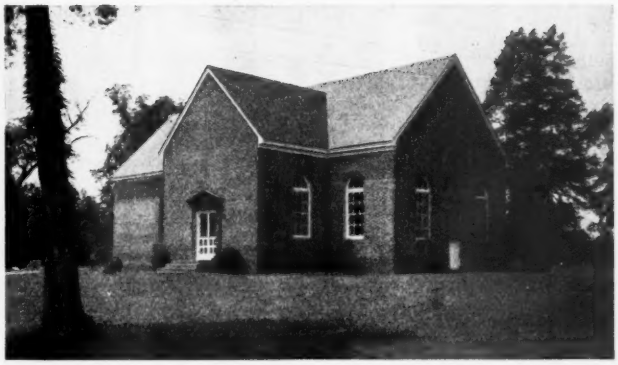


Fig. 5 and 6

Fig. 5: Mattapony Church, King and Queen County, Virginia.
Built about 1732. View from S.E.

Fig. 6: Abingdon Church, Gloucester County, Virginia.
Built 1751–55. View from S.E.

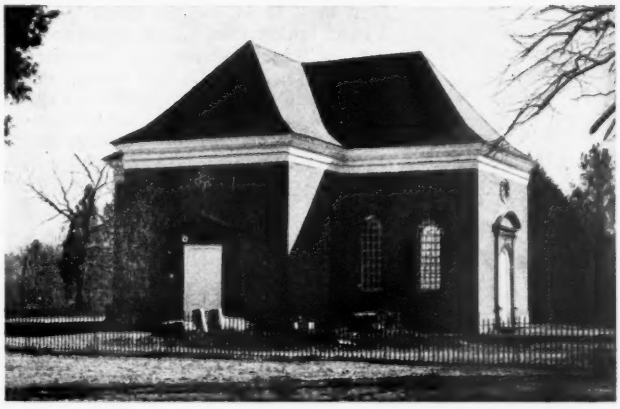


Fig. 7

Fig. 7: Christ Church, Lancaster County, Virginia.
Built 1732. View from N.W.

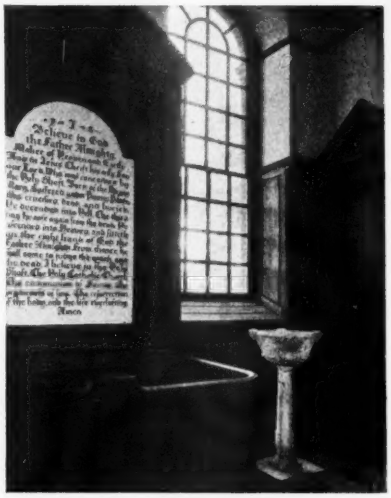
founded as a new capital for Virginia in 1699, the form had a practical advantage that may have led to its adoption. The new church was to be paid for partly by the parish and partly by the colony, and the nave and chancel were made the responsibility of the former while the transept arms were built at the expense of the latter, different builders being separately employed by the vestry and the Assembly for their respective parts of the structure. However, the prestige of the capital led to the adoption of the cruciform plan where there was no such division of responsibility, and in Virginia, alone of the American colonies, cruciform churches came to make up a noticeable proportion of the total. Some of them are so close to Bruton church in their dimensions that one can only suppose that it was specified as the model. These include St. John's, Hampton (1728), Mattapony church in King and Queen County (*circa* 1732), and St. Paul's, Norfolk (1739). Of these, Mattapony (now Baptist) is the least changed externally (Fig. 5); the twin east windows, the pedimented doorway of rubbed brick, and the use of glazed bricks for the headers in the Flemish bond of the walls are characteristic of the period and the region.

Another cruciform church, showing the same features but with the gables treated as pediments and approximating more nearly to a Greek cross on plan, is Abingdon, in Gloucester County, built in 1751–55 (Fig. 6). The finest of the type, without question, is the rather earlier Christ Church, Lancaster County (Fig. 7). This was built in 1732 at the expense of Robert ('King') Carter, whose once famous house of Corotoman—long destroyed—stood three miles away; its designer is not known. Noble in scale—the height to the apex of the pedimented doorway seen in Fig. 8 is nearly 22 ft.—it possesses a marked 'cubist' quality; one suspects that a mathematical system of proportion might again be found to rule the design. The interior is the most complete in Virginia (Figs. 9, 10).

Fig. 8: Christ Church, Lancaster County. Built 1732. The west doorway.

Despite Spotswood's successful introduction of the cruciform church, the oblong building, generally about twice as long as it was broad, remained the commonest type. Ware church, in Gloucester County, is an attractive example of *circa* 1715. The photograph (Fig. 11) is a view from the south-east and shows the doorway near the east end of the south wall that was an almost universal feature of such churches, the other entrance being in the west wall. Porches were rare, and only in the cruciform churches is the chancel or sanctuary differentiated structurally; the only recorded apse is that formerly possessed by Pongoteague church, Accomack County, a cruciform building of the 1730's now reduced to its transept as a result of the Civil War. As a rule the oblong churches have A-form roofs, sometimes with furring applied to the rafters in such a way as to give a kick to the slope just above the eaves. An exception is the Lower Chapel (now Methodist) in Middlesex County, which was built in 1717 and which has what is now often called a 'clipped gable' roof, but which when the church was built was described as a roof 'hipped above the wind beams' (Fig. 12). Inside, a western gallery was standard, and chancel screens were erected from time to time throughout the colonial period.

Often the congregations outgrew these single-cell churches. The most usual solution of the problem was to throw out a wing to one side or the other, producing a building of T or more rarely of L plan. In Scotland such plans had long been common,[4] and even if in Virginia they can be accounted for by common-sense considerations it would seem possible that the presence of so many Scots in the colony had something to do with their ready acceptance. Vauter's church, in Essex County, is a T-plan building, partly of



1719 and partly of 1731 (Fig. 13). St. John's, King William County, now abandoned, is another (Fig. 14); its nave was built in 1732–34 and the north 'wing' at a later, undetermined date. The woodland sites of these churches are characteristic of the region, having been chosen in the first place for their accessibility to a widely scattered rural population—for towns were notoriously few and far between in the colony. In the great days of tobacco their surroundings must in many cases have been less heavily wooded than they are today.

The colonial churches of Virginia, with one or two exceptions, have failed to acquire that patina of sentiment which attracts tens of thousands of paying sightseers every year to the plantation houses. Yet whereas the average plantation house

Fig. 9: Christ Church, Lancaster County. S.E. corner of chancel

Fig. 10: Christ Church. Interior looking into the south transept

[4] See G. Hay, *The Architecture of Scottish Post-Reformation Churches, 1560–1843* (Oxford, 1957).

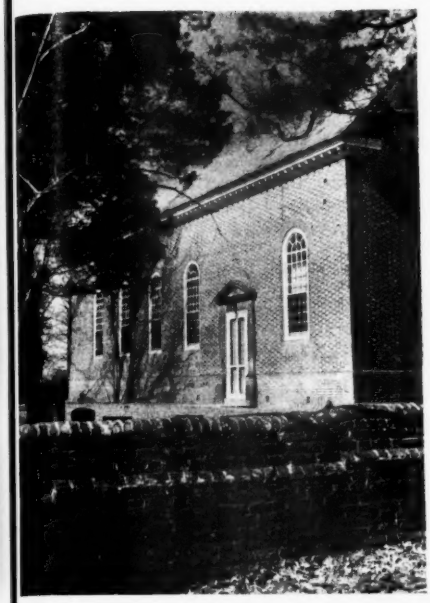


Fig. 11

Fig. 11: Ware Church, Gloucester County, Virginia. Built *c.* 1715. Old churchyard wall in foreground. View from S.E.

Fig. 12

Fig. 12: Lower Chapel, Middlesex County, Virginia. Built 1717; with roof 'hipped above the wind beams'. The porch is modern.

Fig. 13

Fig. 13: Vauter's Church, Essex County, Virginia. View from S.E. 1719 and 1731.

Fig. 14

Fig. 14: St. John's Church, King William County, Virginia. View from N.W. Nave built 1732–34; north wing later.

in Virginia is most significant when seen as an attempt to transplant English ideals to a distant shore, the churches have a character of their own and must be seen for what they are rather than in a frame of reference to what they are not. That is to say, the church architecture of colonial Virginia, however English in its origin, was a truly regional rather than a merely provincial development.

Note on the illustrations.

Figures 4, 9 and 10 are from Colonial Williamsburg photographs. All other photographs are by the author.

Practice Notes

Edited by Charles Woodward [*A*]

MINISTRY OF HOUSING AND LOCAL GOVERNMENT. Grants for improvement of houses. The Ministry have issued a booklet entitled 'New Grants for Better Homes'. It is obtainable from H.M.S.O. price 1*s.* 6*d.* net, and describes in simple terms how a house-owner can claim a grant up to £155 towards the cost of improving houses which lack standard amenities such as a bath, inside W.C. or hot water system. Examples illustrated by plans show the possibilities.

The booklet also describes the grants of up to £400 which can be used for bringing houses up to a standard which is known as the 'Twelve Point Standard'. Payment of these grants is, however, at the discretion of the local council.

Town and Country Development Plans Regulations. Amendments have now been made by the Minister to the Regulations in connection with development plans. Circular 54/59 dated 18 September explains the object of the amendments which are contained in S.I. 1959 No. 1581, and came into operation on 1 October. Circular 54/59 is obtainable at H.M.S.O. price 6*d.* net.

Section 37, Town and Country Planning Act, 1959. Town and Country Planning (control of advertisements) Regulations, 1948–1951. Circular 56/59 states that, in view of the inquiries received, this circular is issued to explain that section 37 of the Town and Country Planning Act, 1959, which relates to the notification of applications for planning permission to owners, does not apply to consents for the display of advertisements given by or under the Town and Country Planning (Control of Advertisements) Regulations 1948–51.

Local authorities will be aware that it is a condition of those consents that before any advertisement (except certain advertisements required by statute or Parliament) is displayed on land, the permission of the owner of that land or other person entitled to give permission shall be obtained. The full terms of this requirement are to be found in regulation 5(4) of the Town and Country Planning (Control of Advertisements) Regulations, 1948 (S.I. 1948 No. 1613) as amended by regulation 3 of the Town and Country Planning (Control of Advertisements) Regulations, 1949 (S.I. 1949 No. 1473).

'Prestige' advertising on Litter Bins. Minister's advice to local authorities. The Minister of Housing and Local Government, Mr. Henry Brooke, has told local authorities that he believes that commercial and other interests might be prepared to supply free litter bins in areas where more are needed, if they are allowed to use the bins to display small 'prestige' advertisements.

In a circular 52/59, copies of which have also been sent to a number of commercial and industrial associations, the Minister suggests that the advertisements should not be larger than 8 in. by 1 in., and should be fixed to the inside of bins at the back immediately below the rim. Whilst every case must be considered on its merits, local authorities may feel that advertisements like this would not spoil the appearance of the street.

Emphasising that litter bins should be well designed, the Minister urges that if a prestige advertisement is permitted, the style, size and colour should be carefully considered. He has been assured that the Council of Industrial Design is willing to advise commercial and manufacturing concerns, and he suggests that local authorities might ask potential suppliers of bins whether the Council's advice has been taken. (24 August 1959.)

Excessive Prices for Furniture and Fittings. New law to protect tenants. Mr. Henry Brooke, Minister of Housing and Local Government, is drawing the attention of local authorities to the Landlord and Tenant (Furniture and Fittings) Act, 1959, a Private Member's measure, which came into force on 29 August. (Circular 53/59.)

The Act strengthens the existing law relating to the charging of excessive prices for furniture and fittings as a condition of an agreement for a tenancy, and gives local authorities new powers in this connection.

The Landlord and Tenant (Rent Control) Act, 1949, and subsequent amending legislation, made it an offence to require a premium for the grant, renewal, continuance or assignment of a tenancy to which the Rent Acts apply, with certain exceptions, notably where a lease of 21 or more years is involved. The Act provided that an excessive price for furniture and fittings should be treated as an illegal premium. The Rent Act 1957 applied these provisions to certain decontrolled tenancies.

The new Act creates two additional offences relating to these tenancies. The first is to *offer* furniture and fittings, at an excessive price, as a condition of the grant or assignment of a tenancy, and the Act thus has effect at the stage when the premises are being put on the market—at an earlier stage, that is, than the provisions of the 1949 Act. The second is to make it an offence to fail to furnish an inventory of the furniture and fittings, specifying the price asked for each item, to people who are supplied with particulars of the tenancy. The penalty for either offence is a fine not exceeding £100.

The Act also provides that a local authority who reasonably suspect that furniture and fittings are being offered at an excessive price, may, after giving not less than 24 hours' notice, inspect the premises.

The new Act applies to Scotland as well as to England and Wales. (28 August 1959).

MINISTRY OF AGRICULTURE. 10 September 1959. Joint Announcement by the Agricultural Departments in the United Kingdom. Improvements on the farm. Changes in Standard Costs. Under regulations which came into force on 17 September, changes have been made in the arrangements under which a grant may be based on standard costs for certain improvements carried out under the Farm Improvement Scheme. The system has also been extended to improvement grants available under the Hill Farming and Livestock Rearing Acts. Leaflets which set out the new standard costs in full can be obtained from local offices of the Ministry of Agriculture, Fisheries and Food, the Department of Agriculture for Scotland and the Ministry of Agriculture for Northern Ireland.

Under these new arrangements promoters of approved Hill Farming and Livestock Rearing Land Improvement Schemes may now elect to have grants for certain items of work based on standard costs instead of actual costs. They must, however, make their choice and obtain the necessary approval before they start work on the item concerned.

1. The Regulations are made respectively under S.1 of the Agricultural Improvement Grants Act, 1959 and S.13 of the Agriculture Act, 1957.

2. The Regulations have been made after consultation with the Advisory Committee on the Farm Improvement Scheme, the Hill Farming Advisory Committees for England, Wales and Northern Ireland and for Scotland, and the Associations representing farmers, landowners and professional men in the United Kingdom.

3. The standard costs prescribed in the new Regulations are identical for each scheme except for certain items which are not appropriate to Hill Farming and Livestock Rearing Land Improvement Schemes.

4. As at present under the Farm Improvement Scheme, an applicant who elects to have his grant based on standard costs need only provide plans and outline specifications necessary to indicate clearly the nature of the proposed work. In carrying out the work he must comply with the requirements laid down for the particular item concerned. Competitive tenders and receipts or other vouchers are not required but receipts are required where professional fees have been incurred and the higher rate of grant is being claimed.

5. Copies of the Farm Improvement (Standard Cost) Regulations 1959 (S.I. 1959 No. 1555) and the Livestock Rearing Land Improvement Grants (Standard Costs) Regulations 1959 (S.I. 1959 No. 1556) are obtainable from H.M.S.O., price 10*d.* (by post 1*s.* 0*d.*) and 9*d.* (by post 11*d.*) respectively.

LONDON COUNTY COUNCIL. Progress in the expanding Towns. The L.C.C. is co-operating in the expansion of a dozen country towns in order to provide homes and employment for some 28,500 families from London over the next 15 years.

Expansion schemes are in operation for Bletchley and Aylesbury in Buckinghamshire, Swindon in Wiltshire, Haverhill, Thetford and Bury St. Edmunds in East Anglia, Huntingdon, Letchworth in Hertfordshire and Luton in Bedfordshire. Two more schemes—at Ashford in Kent and Basingstoke in Hampshire—have recently been agreed. These, with the L.C.C.'s own scheme in Edenbridge, will provide homes and jobs for about 28,500 families. The two schemes in the Luton area will not need additional industry. Nor will Letchworth for the time being.

1,599 families have moved so far. Another 1,097 will move shortly and employment for them is already arranged. There are attractive opportunities for industrial development on 10 industrial estates covering some 360 acres in all. 15 firms from London or Greater London are established in 4 of the towns; 3 other firms have factories under construction; 35 more have agreed in principle to move. More still have shown interest and are discussing possibilities with the Council's Industrial Information Centre at County Hall. (7 September 1959.)

NATIONAL JOINT COUNCIL FOR THE BUILDING INDUSTRY. National Working Rule 6 has been amended by the Council and came into operation on 5 October. The Rule deals with daily travelling allowances and the circumstances in which operatives are entitled to travelling time allowances. The Rule is published from the Council's offices at 11 Weymouth Street, London, W.1.

MINISTRY OF EDUCATION. The remodelling of old schools. Mr. Geoffrey Lloyd, Minister of Education, is speeding up the drive to improve old school buildings. In a circular, 10/59, issued to local education authorities on 5 September Mr. Lloyd emphasises the Government's intention to pursue vigorously the schemes outlined in the White Paper, 'Secondary Education for All'.

Building allowances to authorities under the 'minor works' programme, recently increased, will enable a substantial start to be made on the task, and the Minister anticipates that remodelling projects will become an increasingly large and important element of the annual major building programmes.

The wide variety of existing buildings, especially in the range of accommodation they provide and in their physical condition, means that replanning schemes cannot be based on stock solutions. The simplest solution—to leave existing rooms unchanged and merely add extra accommodation—will rarely be the best way, says the circular. Each case calls for careful study.

To save time, authorities are asked to settle priorities within their own areas and start preparing schemes for the most urgent remodelling projects in advance of their inclusion in a building programme. The circular explains that before projects of this kind can be proposed or approved in principle, a great deal more preparatory work is required than would be the case with an entirely new school. The Minister says that he will be prepared to agree schedules of remodelling work submitted beforehand, so that as soon as projects can be included in an annual building programme they can be pushed forward without delay.

General Policy Outlined. A memorandum is issued with the circular. Part I attempts in a preliminary way to outline criteria for selecting the projects on which it will be worth incurring capital expenditure and for deciding what standards should be aimed at. It recognises that many thousands of schools fall below modern standards and that their shortcomings can be set right only by a long-term effort. Resources must therefore be concentrated where they will have a constructive and enduring effect.

As a general rule, where the life of a school is expected to be less than ten years, remedial work should be confined to repairs and maintenance. If a school is likely to be retained in use for more than ten years before being replaced, a 'minor works' project may be justified. The amount which it will be reasonable to spend will depend on the size and condition of the school as well as its expected life.

There remains that large group of schools which must remain in use for as long as can be foreseen. Where such schools can be brought up to the standards of the Building Regulation, this should be done, and the general aim should be to concentrate capital expenditure on projects of this kind. Full remodelling, even if the cost is substantial, will represent good value for money provided that it results in a school that is comparable in standard and amenity with a new one, and can continue in service for another generation at least.

Remodelling by Instalments. The memorandum warns of the danger of carrying out work in instalments, except in those cases of major rehabilitation schemes which for financial or other reasons call for phasing in two and even more main instalments. But an essential condition of the long-term phasing of remodelling projects is that the ultimate scheme must be drawn up at the outset. This must show that the buildings can be brought up to adequate standards at an acceptable cost, that the investment of fresh capital is a worthwhile proposition and that the first instalment is consistent with the ultimate scheme and a 'sensible entity in itself'.

The memorandum is presented in three parts; Part II deals in detail with the issues raised in Part I and discusses the practical steps to be taken when handling particular remodelling projects. Part III contains notes on the remodelling of different spaces in schools.

One of the memorandum's main purposes is to stimulate thought and discussion, and to encourage the interchange of ideas and experiences which has proved fruitful in other fields of educational building. It is intended to give further advice later as more experience is gained, particularly on physical standards and on the cost of remodelling schemes. With this in mind, the Ministry's Architectural Development Group have begun work on the design of a remodelling project, and the lessons learnt from this will later form the basis of a Building Bulletin.

RIGHTS OF LIGHT ACT, 1959. This Act received the Royal Assent on 16 July 1959, and provides for the temporary extension of the prescriptive period of 20 years for the acquisition of rights of light to 27 years in respect of any proceedings begun after the passing of the Act and before 1 January 1963, and to proceedings in any action begun on or after 14 July 1958, which has not been finally disposed of before the passing of the Act. These provisions came into operation on 16 July 1959.

In order to avoid the necessity of erecting a screen to prevent the acquisition of rights to light during the prescriptive period the Act provides that a statutory notice can be registered by the servient owner in the local register of land charges. This provision came into effect on 16 October 1959. After the notice has been registered for one year it will constitute an interruption of the enjoyment of light unless it is cancelled, lapses within a year, or is effectively challenged by an action within a year. All those likely to be affected by such a notice must be notified and a certificate of the Lands Tribunal that this provision has been complied with must be obtained. Rules under the Lands Tribunal Act, 1949, should be available after 16 October in respect of proceedings before the Lands Tribunal and for requiring applicants to obtain certificates to comply with the procedure and supply information as may be required by the Rules. The Rules can be obtained at H.M.S.O.

PARTY WALLS IN LONDON. London Building Acts (Amendment) Act 1939. Party Walls. Rights of Building and Adjoining Owners. Part VI. This Act came into force on 1 January 1940. It repealed the provisions as to party walls in the London Building Act 1930, and amended the law relating to them. This is reprinted in full in response to a number of recent inquiries.

Definitions

For the purposes of this Part of the Act a party wall is either a wall being part of a building and standing on lands of different owners to a greater extent than the projection of any artificially formed support on which the wall rests or so much of a wall as separates buildings belonging to different owners and does not stand on the land of different owners.

(In the general definitions, section 4, a party wall is defined as so much of a wall forming part of a building as is used or constructed to be used for separating buildings belonging to different owners or occupied or constructed or adapted to be occupied by different persons together with the remainder of the wall (if any) vertically above the portion of the wall so used. Part VI is, however, excepted from this definition and the rights of building and adjoining

owners are governed by the definition of a party wall in Part VI.)

The 'foundation' of a wall means the solid ground or artificially formed support resting on solid ground on which the wall rests. 'Special foundations' mean foundations in which steel beams or rods are used to distribute the load.

'Party fence wall' means a wall, not being part of a building, which stands on lands of different owners and is used to separate adjoining lands. It does not include a wall standing on the land of one owner with the artificially formed support projecting into another owner's land.

'Party structure' means a party wall and also a floor, partition or other structure separating buildings or parts of buildings approached solely by separate staircases or separate entrances from without. 'Owner' includes every person in possession or receipt either of the whole or any part of the rents or profits of any land or tenement or in the occupation of any land or tenement otherwise than as a tenant from year to year or for any less term or as a tenant at will.

'Building owner' means such one of the owners of adjoining land as is desirous of building or such one of the owners of buildings, storeys or rooms separated from one another by a party wall or party structure as does or is desirous of doing work affecting the party wall or party structure.

'Adjoining owner' and 'adjoining occupier' mean any owner and any occupier of land, buildings, storeys or rooms adjoining those of the building owner. ('Occupier' does not include a lodger.)

Land Unbuilt on at a Junction

Where lands of different owners adjoin and are unbuilt on at the junction, except for a boundary wall which is not a party fence wall or the external wall of a building, a party wall or a party fence wall may, with the consent of the adjoining owner, be built on the land of each owner in such a position as may be agreed. The expense is defrayed between the owners according to the use made or to be made of the wall, and regard is to be had to the cost of labour and materials prevailing at the time the use is made.

'Special foundations' may not be placed upon the adjoining owner's land without his written consent. If he consents and he afterwards builds upon his land and the 'special foundations' increase the cost of his building, he may recover such increase from the owner of the 'special foundations'. He must deliver an account of the increased cost within two months of completing the work in connection with the 'special foundations'.

If the adjoining owner will not agree to the erection of a party wall or party fence wall then the building owner must build an external wall or a fence wall on his own land, but he has the right to place projecting footings and foundations on and below the level of adjoining owner's land. Compensation is to be made to the adjoining owner and adjoining occupier for any damage. There is no right to place 'special foundations' on the adjoining owner's land and his written consent must be obtained. The adjoining owner may recover the increased cost of his building due to the 'special foundations' if he has consented to them. The procedure is indicated in the preceding paragraph.

Party structure notices E. and F. published by the R.I.B.A. are those used in the above cases.

If any difference arises between the owners and surveyors are appointed R.I.B.A. form G. is used for the selection of the third surveyor.

Land Built on at Junction

Where at the line of junction the land of different owners is built on or a party fence wall or the external wall of a building has been erected, the building owner has the following rights: To make good, underpin, thicken, repair or demolish and rebuild a party structure or party fence wall that is defective or is in want of repair.

To demolish a timber or other partition which separates buildings belonging to different owners and is not in accordance with London Building Acts or bye-laws and build a party wall in accordance with them.

To demolish and rebuild intermixed rooms or storeys belonging to different owners not in accordance with London Building Acts or bye-laws and rebuild them to conform to those Acts or bye-laws.

Where buildings are connected by arches or structures over public ways or over passages belonging to other persons, to demolish them where not in accordance with London Building Acts or bye-laws and rebuild them to conform to those Acts or bye-laws.

Expenses in connection with the above work are defrayed by the building and adjoining owner having regard to the use each owner makes or may make of the party structure, party wall, party fence wall, rooms, storeys, buildings, arches or structures. Regard is to be had to the cost of labour and materials prevailing at the time the use is made. Regard is also to be had to the thickness of the party wall or party structure required for support of the respective buildings of the two owners.

One month's notice is required to be served on the adjoining owner in the case of work to a party fence wall and two months' notice in the case of work to a party structure. The R.I.B.A. form is B. in the case of a party fence wall and A. in the case of a party structure.

No notice need be given where work is required to comply with a Dangerous Structure Notice.

A building owner has the right to execute the following work at his own expense:

To underpin, thicken, or raise a party structure or party fence wall or an external wall built against a party structure or a party fence wall. All damage to the adjoining owner's premises must be made good including the internal decorations and finishings, and the flues and chimney stacks belonging to the adjoining owner on or against the party structure or external wall must be carried up to such height and in such materials as may be agreed or provided for in an award.

To demolish a party structure which is not strong enough or high enough for the building owner's building and to rebuild it strong enough and high enough. Making good damage and carrying up flues and chimney stacks must be carried out by the building owner as described in the previous paragraph.

To cut into a party structure. Making good damage as before described must be carried out by the building owner.

To cut away footings or any projecting chimney breast, flue, jamb or other projections from a party wall, party fence wall, external wall or boundary wall on or over the land of the building owner in order to erect, raise or underpin an external wall against the party wall, party fence wall, external wall or boundary wall or for any other purpose. Making good damage as before described must be made good by the building owner.

To cut away or demolish such parts of the adjoining owner's wall or building which overhangs the land of the building owner so as to erect a vertical wall against that wall or building. Making good damage as before described must be carried out by the building owner.

To execute any other works incidental to the connection of a party structure with the premises adjoining it.

To raise a party fence wall, to raise a party fence wall and use it as a party wall, to demolish a party fence wall and rebuild it as a party fence wall or as a party wall.

One month's notice is required to be served on an adjoining owner in the case of work to a party fence wall and two months' notice in the case of work to a party structure. R.I.B.A. forms B. and A. respectively apply to this work.

'Special foundations' may not be placed upon the adjoining owner's land without his written consent and one month's notice must be given by the building owner where it is proposed to do so. Plans, sections and details of the construction of the 'special foundations' must accompany the notice together with reasonable particulars of the loads they are to carry. If the adjoining owner consents and he afterwards builds on his land and the 'special foundations' increase the cost of his building, he may recover such increase of cost from the owner of the 'special foundations'. He must deliver an account of the increased cost within two months of completing the work in connection with the 'special foundations'. If the adjoining owner consents to 'special foundations' he may give a counter notice that he requires them to be placed deeper than proposed (the increased depth must be stated) or made strong enough to take the load (to be carried by columns) of his intended building, and plans sections and particulars must accompany the counter notice. The counter notice must be served within 21 days after the building owner's proposal to construct 'special foundations'. The building owner need not comply with the requirements of the counter notice if it would be injurious to him or cause unnecessary inconvenience or unnecessary delay in connection with the works to the party structure. The expense of the work carried out under the counter notice must be defrayed by the adjoining owner. The building owner must deliver an account to the adjoining owner within two months of the completion of the work and if the adjoining owner does not object within one month after receiving the account he is deemed to have no objection.

Underpinning an Adjoining Owner's Building

Where a building owner proposes to erect within ten feet of an adjoining owner's building a building or structure independent of the adjoining owner's building any part of which within ten feet will extend to a lower level than the level of the bottom of the foundations of the adjoining owner's building or proposes to erect within 20 feet from any part of an adjoining owner's independent building a building or structure the external face of which produced downwards will meet an angle of 45 degrees taken from the point where the external face of the adjoining owner's external wall produced downwards meets the bottom of its foundations he may, and if required by the adjoining owner must, underpin or otherwise strengthen or safeguard the foundations of the adjoining owner's building as may be necessary.

One month's notice must be given to the adjoining owner by the building owner before commencing the work and saying whether he proposes to underpin, strengthen or safeguard the foundations of the adjoining owner's building. Plans and sections showing the site of the proposed building or structure and the depth of the excavation must accompany the

notice. Within 14 days after the service of the notice the adjoining owner may serve a notice that he disputes the necessity of the proposed underpinning or requires it to be done as the case may be and a difference then arises. Where the building owner executes the work he must compensate the adjoining owner and adjoining occupier for any inconvenience, loss or damage resulting from the work. If required the building owner must supply the adjoining owner with plans, sections and particulars of the work when it has been completed. R.I.B.A. forms C. and D. are applicable to this work.

Excavation on Sites Next Narrow Streets

Where a building owner proposes to erect a building on land next a street or way less than 20 feet wide and to a depth of 20 feet or more below the level of the highest part of the land immediately abutting on the street, notices must be exhibited on the premises so as to be observable from every street or way on which the land abuts saying where plans and sections of the excavation can be inspected. The plans and sections must be on view within two miles of the premises, and the notices must be exhibited four weeks before work is begun.

Counter Notices by Adjoining Owner

The adjoining owner may require chimney copings, breasts, jambs, flues, piers or recesses and similar works to be built in respect of a party fence wall or a party structure, and on receiving the building owner's notice he must within one month serve a counter notice making these requirements. The building owner must comply with the counter notice unless the work would be injurious to him or cause unnecessary inconvenience to him or unnecessary delay in the execution of the work in connection with the party structure or party fence wall. The expense of the work carried out under the counter notice must be defrayed by the adjoining owner. The building owner must deliver an account as previously indicated.

Additional Use

Where an adjoining owner makes use of a party structure, party fence wall or external wall built against a party structure or party fence wall which has been underpinned, thickened or raised, or a party structure or party fence wall which has been rebuilt, beyond the use he made before such work was carried out, he must defray a due proportion of the expense having regard to the additional use. Unless otherwise agreed between the building and adjoining owners or provided for in the award, regard must be had to the cost of labour and materials at the time the additional use is made.

Differences

An adjoining owner and the adjoining occupiers may consent in writing to the building owner carrying out the work described in the paragraph headed 'Land built on at junction'.

If an owner on whom a party structure notice or a counter notice has been served does not express consent in writing within 14 days he is deemed to have dissented and a difference then arises. If an adjoining owner on whom a notice has been served in respect of the work described in the paragraph headed 'Underpinning an adjoining owner's building' within 14 days serves a notice on the building owner that he either disputes the necessity of the work or requires underpinning as the case may be, a difference then arises.

When a difference arises one surveyor may act for both parties and settle the difference by his award, or each party may appoint a surveyor and the two surveyors then select a third surveyor. If the one surveyor refuses to act or neglects to act after ten days' written request by the parties or if he dies before making his award or becomes incapable of acting the procedure for settling the difference must begin *de novo*.

If either party refuses or neglects to appoint a surveyor after ten days' written request by the other party, the other party may make the appointment.

If a surveyor appointed by one of the parties dies or becomes incapable of acting, that party may appoint another surveyor to act in his place.

If either of the two surveyors refuses or neglects after ten days' written notice by either party to act, the other surveyor may proceed *ex parte*.

If either of the two surveyors refuses or neglects after ten days' written notice by either party to select a third surveyor, the superintending architect of the London County Council may select a third surveyor on the application of either party. If the London County Council is a party to the difference the Secretary of State may make the selection on the application of either party.

If the selected third surveyor refuses or neglects after ten days' written notice by either party or by either surveyor to act, or if he dies or becomes incapable of acting, the two surveyors shall select another third surveyor.

The three surveyors or any two of them settle the difference by their award before the work is commenced and also any difference that may arise during the continuance of the work.

If no two of the three surveyors can agree upon an award the third surveyor must make an award within 14 days of being called upon to do so.

The costs of the award, and the cost of reasonable supervision of carrying out the work covered by the award, are to be paid by such of the parties as the surveyor or surveyors making the award determine.

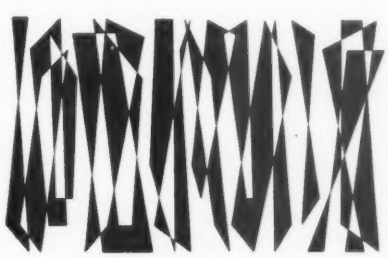
There is an appeal to the County Court against an award within 14 days of its delivery, and to the High Court if the appellant satisfies the County Court that he will be liable to pay more than £100 if the Court decides against him.

Payment of Expenses

Until an adjoining owner pays to the building owner the due expenses, the property in the work executed to which the expenses relate is vested solely in the building owner.

Easements

Proceedings under a party wall notice do not authorise interference with any easement of light or other easement relating to a party wall, or prejudicially affect the right to preserve any right in connection with a party wall which is demolished or rebuilt.



Technical Column

AS A RESULT of the first 'Technical Column' which was published in the August issue I have had some correspondence with members on the items they would like to see included. If you have strong feelings about what the Institute should be doing in the technical field I should be very glad if you would write to me. If you do so would you say whether or not you would like your letter considered for publication.

Cost Research and Management

By the time that this issue of the JOURNAL is published the Cost Control Conference at York will be over. This conference will be followed by another in Manchester in January and one in Nottingham probably in March or April 1960, so that if you missed the conferences at Great Missenden or Bristol you still have an opportunity of attending such a conference in the New Year. While the programme is at present mainly concerned with cost research more papers on management are gradually being included.

A tripartite management course organised by the L.M.B.A. in collaboration with the R.I.B.A. and the R.I.C.S. is to be held at Sundridge Park at the end of November. Details of this and of a tripartite conference are given on page 442.

Australian Modular Society

The inaugural meeting in Sydney of the Australian Modular Society was held on 22 September. The Dean of the Faculty of Architecture, University of Sydney, is the first President. The new society is to have similar aims and constitution to the Modular Society of the United Kingdom.

It will be remembered that a year ago the modular movement in the U.S.A. was reconstituted as the Modular Building Standards Association, 'a non-profit organisation dedicated to lowering building costs through dimensional co-ordination of building products and components.'

Specifications for hardwood joinery specimens

In the November JOURNAL for 1958 we published specification notes prepared by the English Joinery Manufacturers' Association. Members may care to know that specimens of the hardwoods listed are now available from the Timber Development Association, 21 College Hill, London, E.C.4. The specimens are cut to a standard size of $4\frac{1}{2}$ in. $\times$ $2\frac{7}{8}$ in. $\times$ $\frac{1}{2}$ in. and are labelled to show their trade and botanical names and their country of origin. A set of 54 specimens costs £3, 10 or more specimens cost 1*s.* 3*d.* each and individual specimens 1*s.* 6*d.* each, post free. If you would like to see the complete set there is

one in the Technical Department at the R.I.B.A. The following specimens are available:

Abura
Afara
Afrormosia
Afzelia
Agba
Ash, European

Beech, European
Birch, European

Camphorwood, Borneo
Cedar, Western Red
Chestnut, sweet

Douglas Fir

Ekki
Elm, European
Gaboon
Greenheart
Guarea
Gurjun

Hemlock, Western

Idigbo
Iroko

Jarrah
Jelutong

Katsura

Larch, European

Mahogany, African
Mahogany, Central American
Makore
Mansonia
Maple
Meranti, red

Nyankom

Oak, European
Oak, Japanese
Oak, Red
Oak, White
Obeche
Opepe

Parana Pine
Pine, British Honduras
Pitch
Podo
Poplar

Ramin
Rauli
Redwood, European

Sapele
Seraya, White
Sycamore

Tasmanian oak
Teak

Utile

Walnut, African
Walnut, European
Whitewood, European

Factory Building Studies

The third pamphlet in this series was published in September. The studies now available from Her Majesty's Stationery Office are as follows:

No. 1. **Modern Multi-Storey Factories (1959)** 2*s.* 6*d.* (by post 2*s.* 10*d.*).
No. 2. **The Lighting of Factories (1959)** 3*s.* 6*d.* (by post 3*s.* 10*d.*).
No. 3. **Floor Finishes for Factories (1959)** 1*s.* 9*d.*

Modern Copying Techniques for the Drawing Office

One would hardly expect Hertfordshire County Council to be publishing a pamphlet on this subject, nevertheless their Technical Library Service have as a result of a symposium held at the Hatfield Technical College. The pamphlet which is well worth reading is available from the County Technical Librarian, Hatfield Technical College, Roe Green, Hatfield, Herts. Price 6*s.* post free. An early pamphlet also resulting from a symposium on Microtext and Microrecording is also available, price 4*s.* post free.

ANTHONY WILLIAMS [*A*]

Book Reviews

4,000 Years of Mexican Architecture. 12½ in. 334 pp. incl. 286 illus. Libreros Mexicanos Unidos. 1956. £4 10*s.*

The large and handsome volume of photographs and captions with this resounding title is the corporate enterprise of the Society of Mexican Architects, the National College of Architects of Mexico, and of the publishers, Libreros Mexicanos Unidos. It is intended to give the reader a synoptic panorama of the Mayan, Spanish colonial and modern architectural accomplishments of that country; but, alas, there are no plans.

It can be seen that the ancient civilisations of Central America were among the few in the world to attain monumentality in their architecture. For the attainment of such results there seem to be two related prerequisites: one is, that the public realm should take precedence over the private and the personal; and the other is, that the time scale for which such works are conceived, should require of them that durability and semi-permanence in which the form long outlasts the transient occasions of its use. The Chinese and the Japanese would seem not much to have interested themselves in such things.

In almost all these architectures the turning point in the transfiguration from the transient and the useful into the permanent and the formal would seem to correspond to the substitution of stone for timber and wood construction; for in many, if not most cases, the forms themselves seem to owe their ultimate origin to their once having been executed in these more plastic and less permanent materials.

The lesson of all this has certainly not been lost upon the modern Mexicans. If often their contemporary architecture seems to substitute the grandiose for the grand, and a sophisticated nationalistic bombast for the persuasive rhetoric of the monumental and the commemorative, the absence in that country of any particular preference for a romantic and Rousseauistic philosophy, of private and personal sensibility, has made it possible for the new architects of Mexico to achieve works in a public and communal scale of grandeur, beside which the international academicism of European official architecture, both democratic and totalitarian, is so much pompous and empty bad taste.

In spite of their language and neighbours, Mexican domestic modern architecture is neither flamboyantly Latin, nor specifically North American. And in its aspect, it appears to embrace a certain Teutonic rigour and thoroughness with a specifically meridional feeling for the poetry of form. There is a certain liking for the more surreal juxtapositions of the harsh and the smooth—very sleek modern houses perched on the roughest of laval outcrops.

The supreme public achievement to date is probably the new University City outside Mexico. Set on a plain in a volcano bounded landscape of great magnificence and luminosity, its site plan, which owes a great deal to Le Corbusier, accomplishes for a heterogeneous collection of buildings large and small, some of them of very indifferent architectural worth, what no additive collection of individual masterpieces can ever accomplish: scale.

The placing of a number of buildings on very tall pilotis, an expensive procedure in any case, and more especially so in so seismic a part of the world as Mexico, is entirely justified by the results.

There are very specific reasons, the principal one being the association of the international academic architecture of bureaucracy with Colonialism, which made it possible for the Mexicans to see in modern architecture an implement and expression of national liberation; and this, with an alliance between constructivism and their own folklore, to achieve what the Russians failed to achieve: an architecture which is neither merely academic nor yet simply utilitarian, as so much post Zhdanovist architecture has been.

DOUGLAS C. STEPHEN [*A*]

In the Nature of Materials, by *Henry Russell Hitchcock*. 8½ in. 178 pp., 413 illustrations. London: Elek Books. 1958. £4 4*s.*

Professor Hitchcock's monograph on Frank Lloyd Wright, a classic of its kind and the only such publication approved and supervised by the architect, has recently been re-printed.

It is a book well-known to serious students of modern architecture, and therefore requires little introduction. Despite the fact that it was first published nearly 20 years ago, this is still the best and most comprehensive work available on Frank Lloyd Wright. Like most American books on architecture it is profusely illustrated: although, in a book of this price, one might reasonably expect more of the plates to be in colour. The text is excellent, and it includes a complete catalogue of all

Wright's major buildings, and projects between the years 1887 and 1941, running to 24 pages.

Wright's early career and the formative years in Sullivan's office are fully discussed, and Professor Hitchcock suggests that although Wright was much influenced by Sullivan the 'influence was probably . . . mutual'. Unfortunately, however, he produces little evidence to substantiate this claim, and we can only regard it as speculative.

There are plans and photographs of over 140 of Wright's more important projects, and it is a point worth noting that only 37 of the works illustrated are non-domestic in character. Wright, we know, was primarily a domestic architect: nevertheless, it comes as something of a surprise to discover that nearly three-quarters of his pre-1941 output was in the domestic field.

Although this is its fifth printing, the book wears astonishingly well. Most of its earlier judgements on Wright and his work remain intact, although it can well be argued that Wright's stature and influence as an architect is far less today than when the book was written. On page 103 Professor Hitchcock writes: 'In 1941 . . . Wright seems to stand poised for new triumphs at the opening of a great phase of his career.' But, as we know, the new triumphs never materialised. After 1941 Wright produced few outstanding buildings: certainly nothing to equal his masterpieces of the thirties, the Kaufmann house and the Johnson Administration Building. This—and the post-war trend towards an ever more impersonal, mechanistic architecture—tended to isolate him still further from current architectural development.

One can only hope that any future edition of the book will try to bring the story up to date by including examples of Wright's post-1941 work and, if possible, an additional chapter covering the period between 1941 and his death earlier this year.

DONALD H. TOMKINSON [*A*]

Italian Villas and Palaces, by *Georgina Masson.* 12½ in. 244 pp. incl. illus. Thames and Hudson. 1959. £4 4*s.*

The Renaissance villas and palaces of 15th-century Italy are remarkable as a reflection not only of the genius of the architects and craftsmen, but also of the taste and enterprise of their patrons. Miss Masson in this impressively produced illustrated survey pays tribute to both. She has chosen and photographed examples with admirable discrimination, arranging them regionally and so combined to represent the republican oligarchies, the ducal courts and the Papal States of Rome. Each section is prefaced by highly informative introductory and detailed notes, the titles being grouped with them. The vital clue to any photograph being a number not always easy to find, the lazy reader is tempted just to enjoy the photographs as such, and this does the book less than justice.

R. E. E.

Buildings of Europe: Gothic Europe, edited by *Harald Busch* and *Bernd Lohse,* trans. by P. Gorge. 10¾ in. xxiii pp.+200 pls.+front. Index. B. T. Batsford. 1959. £2 2*s.*

Most people will buy this book for its 200 excellent photographs, covering a wider field than is general, and it is well worthwhile for these alone. The coloured plate of the dust jacket reminds us that much is lost in black and white photography, although the cost of coloured plates would make a very expensive work and so, in this case, defeat its purpose. Edited by a German, it is natural that there should be a large number of German examples, but the choice is not unbalanced, and the range spans from Palma de Mallorca to Trondhjem, includes some secular buildings, and allots 36 plates to England and one to Ireland. The quality of the photography is not only technically good, but most sympathetic to the essential nature of its subject.

The introduction and commentaries deserve reading; but although the intelligent layman will be satisfied, it does show how hard it is to make a balanced and accurate survey of such a subject in only 16 pages. Whereas France, Germany and England are reasonably well covered, the paragraph on the Netherlands (barely including Belgium) is odd to the point of uselessness. It is surprising to find, in such a carefully prepared summary, that Salisbury Cathedral is claimed as 'originally an abbey church', and misleading to omit mentioning that Oxford Cathedral was not designed as a cathedral. The style of the description recalls Mr. John Harvey's scholarly romanticism. As such, it is very lively, and at times inspiring.

M. D. BEASLEY [*A*]

The Thurloe Estate, by *Dorothy Stroud.* COUNTRY LIFE, for Thurloe Estates Ltd. 1959. (Printed for private circulation, but obtainable at 10*s.* 6*d.* per copy from Thurloe Estates Office.)

The architectural character of the Thurloe Estate was set by George Basevi. To those who associate his name with Fitzwilliam pomp and Belgravian circumstance a lighter touch is revealed in South Kensington. Here are essays in Regency domestic design that are modest, pure and full of delightful detail. They exemplify the development of the terrace house from Georgian brickwork (as in Alexander Place, 1827), through the transitional façades of Thurloe Square—where stucco features were introduced—to the all-stucco fronts of Pelham Crescent and Sidney Place, built on adjoining land for Smith's Charity. It is not difficult to substantiate the claim that Basevi set the prevailing pattern of the early Victorian town house.

Those who later extended the Estate into the Cromwell Road area profited little from the example of the Alexander family's first architect. For Basevi's delicacy, C. J. Richardson substituted floridity. House design ran to seed and over-bearing mansions were built, that became social anachronisms half a century later.

Miss Stroud has delved energetically, and marshalled most of the known facts about this development into a slim volume, attractively illustrated. The Estate's enterprise in commissioning this useful record is commendable.

EDWARD JAMILLY [*A*]

Sydney's Great Experiment, by *Denis Winston.* 10 in. xvi+146 pp. incl. illus., maps. Index. Sydney. Angus and Robertson. 1957. £1 17*s.* 6*d.*

Cumberland County forms an administrative region of some 1,650 square miles, and consists of Sydney and the rural and metropolitan area about it. Since the coming into operation of the New South Wales Local Government (Amendment) Act in 1951, all development in this county is subject to planning control by the Cumberland County Council or the local shire or municipal authority. This is the 'great experiment', which Denis Winston [*F*] describes here in detail, with all its attendant problems and difficulties. The story, however, is in the main an encouraging one and must be of great interest to Australians. To us in this country, too, the progress of the Cumberland County Plan, which contains so many parallels with post-war events in Britain, is of more than passing importance. The presentation of the book reflects the very high standards which are rapidly becoming characteristic of Australian publishing.

Explanatory Handbook on the B.S. Code of Practice for Reinforced Concrete, revised by *W. L. Scott, W. H. Glanville* and *F. G. Thomas.* 9¼ in. 164 pp. incl. illus. Concrete Publications. 1957. 12*s.* 6*d.*

The new edition of this reliable and well established book follows the general lines of the 1950 edition, but has been modified to deal with the extensive revisions made to the Code issued in 1957 (CP 114).

Ladengestaltung: Shop Design, by *Robert Gutmann* and *Alexander Koch.* 12 in. 200 pp. incl. illus. Index. Stuttgart: Alexander Koch. 1958. £3 18*s.*

The books of this excellent publishing house show a remarkably acute sensitivity to the fluctuations of fashion in architectural decoration. Apart, therefore, from their immediate value to the architect as accurate reflections of current taste, they remain period pieces of much interest to the social historian. This book on shop design is a typical example. It consists for the most part of photographs of shops of every kind in many countries, all neatly dressed in the same clothes—rich but not gaudy—and all speaking the international language of present day architecture, with its elegant phrasing, but curiously refined and limited vocabulary. The text, English and German, consists of general comment only, and is extremely short. Plans and drawings of details are provided in some cases.

J. C. P.

How to Write a Building Specification, by *G. Chrystal Smith.* 7½ in. 136 pp. Newnes. 1957. 16*s.*

Specification Writing for Architects and Surveyors, by *A. J. Willis.* 2nd ed., revised. 9¾ in. 88 pp. Crosby Lockwood. 1958. 9*s.* 6*d.*

Divided into three sections, G. Chrystal Smith's book begins with an outline of a standard method for writing all specifications. This is followed by a large number of model clauses, applicable to many types of specification, and, finally, by a complete specification for a conversion and improvement scheme.

Arthur Willis, who has done so much to smooth the paths of architects and surveyors, offers a different method, and the success of the first edition of his book (1953) gave a fair indication of its usefulness. Doubting the value of model clauses and assuming the specification writer to be capable of drafting the actual words himself, he provides a very detailed list of points which may have to be considered, including references to all relevant British Standards and Codes of Practice. The latter have been corrected, supplemented and brought up-to-date, otherwise the new edition is little changed.

Mit Büchern wohnen, by *Karl Baur.* 10½ in. 132 pp. incl. illus. Index. Munich: Callwey. 1958. DM.19.50.

An amiable, pleasantly produced, discursive, chattily written volume on the problems of living with books, written principally from the point of view of the private book collector. A certain amount of practical advice of a general nature is provided for the architect and furniture designer as well—indeed, this seems to have been the chief motive of the author—and there is a large section of photographs of bookshelves and methods of book storage in domestic settings.

Spending, as I do, my working life with books, I find it difficult to approach the things with a dispassionate, critical detachment, but, on the whole, the examples illustrated look harmless and pleasant enough. The text is short and interspersed with line drawings, some for entertainment and some for instruction. There are summaries in English and French.

Das Wohnliche Haus, by *Otto Kindt.* 10½ in. 15 + 82 pp. incl. illus. Berlin: Ullstein. 1957. DM. 9.80.

One of the problems and fascinations of translation is that so few words in one language can be exactly translated into another. 'Wohnlich' is a case in point. 'Liveable-in' is about what it means, but 'comfortable' is the word I shall use. Here then are forty examples of recent, potentially comfortable, rather modest, detached one-family houses in Germany, Austria, Scandinavia, Switzerland, Holland and England. There is nothing spectacular about any of them; no trace of art for art's sake; but they strike me as an unusually sensible selection. The book is well produced, but Ullstein have a long tradition of competence in this respect. Floor plans and, sometimes, sections are provided, as well as good photographs and, of course, brief descriptions.

J. C. P.

Applied Building Construction: a Second Year Course, by *Anthony Medlycott.* 10½ in. 128 pp. incl. illus. Chapman and Hall. 1958. £1 5*s.*

This book follows the pattern of the first year course, which was published a year earlier; it is sensible, refreshing and thorough, written by a lecturer who has the necessary knowledge and can put it over. Mr. Medlycott's method will appeal especially to students, since, unlike many other publications, text and diagrams are directly connected, so that there is no time lag between reading and finding the sketches.

The drawings are clear and without frills. Photographs are omitted, which I consider an advantage in a book on construction. The chapters are well organised, each commencing with a glossary (a blessing for the young student), and ending with brief notes on materials and a list of reference books, a very sensible and effective arrangement, which will also please the more experienced reader. The book has eleven chapters and, in parts, goes beyond the syllabus for second year architectural students. I understand that a third volume will follow to complete the series.

The author has obviously worked hard to keep abreast of technical progress and has avoided the use of worn and out-dated diagrams, which are so difficult to discourage.

This book is pleasant to read and to study, a rare quality for a book on building construction. I can recommend it without hesitation.

R. HERZ *[F]*

* * *

Nineteenth-Century Architects: Thoughts on Obituaries 1843–1919

THE LONG but not unrewarding task of compiling an index of architects and cognate personnel recorded in the BUILDER newspaper from 1843 (its first year of publication) to 1919—a period of 77 years—has recently been completed for the R.I.B.A. Library; incidentally, the date of the first issue was actually 31 December 1842 (a most inconsiderate starting-point!). The latest date was chosen as it precedes the starting-point of another Library tool, the current 'Grey Books' or index of published buildings 1920– , which contains some obituary references. Certain allied categories were also included—writers, historians, craftsmen, stained-glass artists and civil engineers who have done bridges and other structures of architectural character.

The process has thrown much light on the personalities and activities of the last century. As was to be expected, well-known names are adequately represented—the Smiths have 15 cards, Williamses 9, Joneses a mere 8, but Scotts 10. Also to be expected were the circumstance that 'B' is the longest letter and 'C' next: the Barrys, Bentley, the Blomfields, Bodley, Brydon, and the Burnets are among the former. In several cases two or even three generations of a family are recorded: there are, for instance, three of Batsfords, architectural publishers being among the included categories.

The ages of architects varied enormously; there were one centenarian and several octogenarians; on the other hand, a disturbing number in the earlier period died young, some in the 30's, a few even in their 20's. Of these a distressing number died from disease, often in throat and lung; living conditions for some must have been terrible. If time ever permits a chronological index—not only of these obituaries but also of the names in the Library's earlier 'Index of architects' (duplicate typescript, 1956)—more exact statistics can be compiled.

The humanitarian attitude of the writers and editors in the paper generally are much in evidence; Henry Roberts, an early writer, and George Godwin (editor for nearly 40 years, 1844–83) are conspicuous for this virtue; one agrees with Mr. Ian Leslie, the present editor, that a biography of the latter is overdue. In obituaries, praise not only for the technical achievements but personal characters of the deceased were frequent, in a way that today might seem platitudinous and even fulsome, but it was in fact sincere and objective.

Names of non-British architects have been included in the index as they occurred in the paper, and account for a fair proportion of the whole; they had, however, to be carefully 'dug out' from the text, as by no means all obituaries are entered in the volume-indexes. Many are not even in Thieme-Becker's famous biographical dictionary, so they were worth including, even though they may not be used as much as the English entries.

The index gives forenames (when known), titles, places of current practice, dates of birth (when known or ascertained from other sources or inferable from age at decease) and death, title and nature of article, relationships and current partnerships (when stated), key activities when necessary for identification, and adequate references, including pages. The resultant index occupies two card-index drawers, which are available in the Library for consultation; when practicable it will be duplicated for distribution. In the meantime, a third tool of the same kind—an index of R.I.B.A. members—is in process of compilation.

Of the technical problems of the task one cannot write here. The process of compilation, although arduous and patience-taxing, gave one valued insights into the background of architectural practice in the Victorian era.

H. V. MOLESWORTH ROBERTS

Notes and Notices

NOTICES

Inaugural General Meeting, Tuesday 3 November 1959 at 6 p.m. The Inaugural General Meeting of the Session 1959–60 will be held on Tuesday 3 November 1959 at 6 p.m. for the following purposes:—

To read the Minutes of the Tenth General Meeting of the Session 1958–59 held on 16 June 1959.

Mr. Basil Spence, O.B.E., T.D., A.R.A., A.R.S.A., President, to deliver his Inaugural Address.

To present the London Architecture Bronze Medal 1958 to Mr. David du R. Aberdeen [*F*] for the T.U.C. Headquarters Building, a replica of the medal to a representative of the T.U.C., as the building owners, and a Diploma to a representative of Sir Robert McAlpine and Sons, the contractors.

To present the R.I.B.A. Award for Distinction in Town Planning to Mr. Noel Tweddell, T.D. [*F*].

(Light refreshments will be provided before the meeting.)

Election void. Under the provisions of Bye-law 17 the election as Associate of the following has been declared void: Chandrakant Gulabdas Patel.

Classes of Retired Members. Under the provisions of Bye-law 15 applications may be received from those members who are eligible for transfer to the class of 'Retired Fellows', 'Retired Associates' or 'Retired Licentiates'.

The Bye-law is as follows: 'Any Fellow, Associate or Licentiate who has reached the age of 55 and has retired from practice may, subject to the approval of the Council, be transferred without election to the class of "Retired Fellows", "Retired Associates", or "Retired Licentiates", as the case may be, but in such case his interest in, or claim against the property of the Royal Institute shall cease.'

'The amount of the annual subscription payable by such "Retired Fellow", "Retired Associate", or such amount as may be determined by resolution of the Council, excepting in the case of those who have paid subscriptions as full members for 30 years, and who shall be exempt from further payment. A "Retired Fellow", "Retired Associate", or "Retired Licentiate" shall have the right to use the affix of his class with the word "Retired" after it, shall be entitled to receive the JOURNAL and Kalendar, shall be entitled to the use of the Library, and shall have the right to attend General Meetings, but shall not be entitled to vote. A "Retired Fellow", "Retired Associate", or "Retired Licentiate" shall not engage in any avocation which in the opinion of the Council is inconsistent with that of architecture. Nothing contained in this Bye-law shall affect the rights of persons who at the date of the passing of this Bye-law are members of the classes of "Retired Fellows" and "Retired Members of the Society of Architects".'

Formal Admission of New Members at General Meetings. New members will be asked to notify the Secretary, R.I.B.A., beforehand of the date of the General Meeting at which they desire to be introduced and a printed postcard will be sent to each newly elected member for this purpose. On arrival at the R.I.B.A. on the evening of the General Meeting new members must notify the office of their presence and will then take their places in the seats specially numbered and reserved for their use. On being asked to present themselves for formal admission, the new members will file out in turn into the left-hand aisle and after shaking hands with the President (or Chairman) will return to their seats by way of the centre aisle.

Formal admission will take place at all the Ordinary General Meetings of the Session, with the exception of the following: 3 November 1959, Inaugural Meeting; 2 February 1960, Presentation of Prizes; 5 April 1960, Presentation of Royal Gold Medal.

Correspondence with the Institute. In order to facilitate speedier attention to correspondence, and to relieve the staff of a great deal of research, it is particularly requested that members and Students will kindly state in all correspondence with the Institute the class of membership (*F*, *A*, *L* or *Student*) to which they belong.

CURRENT R.I.B.A. PUBLICATIONS

The following is a list of the main R.I.B.A. publications with their prices.

Agreement, Forms of
Form of Agreement for General Use between a Private Building Owner and an Architect or a Firm of Architects.

Form of Agreement for General Use between a Building Owner (being a Statutory Authority) and an Architect or a Firm of Architects.

Form of Agreement between a Local Authority and a Firm of Architects for Housing Work.

Form of Agreement between a Local Authority and a Firm of Architects for Multi-Storey Flats.

Form of Agreement between the Promoters and a Firm of Architects appointed as the Result of a Competition.

Price 6*d.* per form (inclusive of purchase tax). Postage 3*d.*

Architect and His Work, The
Price 6*d.* Postage 4½*d.*

Before You Build. Free.

Certificates, Architects', Form Prepared by the Practice Committee
Copyright Book of 100 Certificates.
Price 17*s.* (inclusive of purchase tax). Postage 1*s.* 6*d.*

Communications in the Building Industry
Report of a Tripartite Conference held at Sundridge Park Management Centre, November 1958.
Price 2*s.* 6*d.* Postage 4*d.*

Conditions of Engagement and Scale of Professional Charges
Price 6*d.* Postage 3*d.*

Contract, Form of Agreement and Schedule of Conditions
For use with quantities: 1939 revised 1957. Copyright.
For use without quantities: 1939 revised 1957. Copyright.
Price 2*s.* 2*d.* per form (inclusive of purchase tax). Postage 6*d.*

Adapted for the use of Local Authorities, for use with quantities: 1939 revised 1957. Copyright.
Adapted for the use of Local Authorities, for use without quantities: 1939 revised 1957. Copyright.
Price 2*s.* 4½*d.* per form (inclusive of purchase tax). Postage 6*d.*

Fixed Fee Form of Prime Cost Contract for use in the repair of war-damaged property: 1946 revised 1956. Copyright.
Price 2*s.* 2*d.* (inclusive of purchase tax). Postage 6*d.*

Cost Plus Percentage Form of Prime Cost Contract for use in the repair of war-damaged property: 1946 revised 1959. Copyright.
Price 2*s.* 2*d.* (inclusive of purchase tax). Postage 6*d.*

Examination, Intermediate, Questions Set At
Price 1*s.* per examination. Postage 4½d.

Examination, Professional Practice, Questions Set At
Price 6*d.* per examination. Postage 3*d.*

Examinations, Final and Special Final, Questions Set At
Price 1*s.* per examination. Postage 4½*d.*

Forms of Articles of Pupilage
Copyright. Price 1*s.* 8*d.* (inclusive of purchase tax). Postage 3*d.*

Membership of the R.I.B.A.
Particulars of the Qualifications for Associateship.
Price 2*s.* 6*d.* Postage 6*d.*

Party Wall Notice Forms, for Use Under the London Building Act

Form A—Party Structures.

Form B—Party Fence Walls.

Form C—Intention to Build within Ten Feet and at a lower level than the bottom of the foundations of adjoining Owner's Building.

Form D—Intention to build within Twenty Feet of the adjoining Owner's Independent Building and to a depth as defined in Section 50(1)(*b*).

Form E—Party Walls and Party Fence Walls on line of Junction of adjoining lands.

Form F—Walls or Fence Walls on Building Owner's land with footings and foundations projecting into adjoining Owner's land.

Form G—Selection of Third Surveyor.
Price 7*d.* per form (inclusive of purchase tax). Postage 3*d.*

Prizes and Studentships (Pamphlet)
Price 3*s.* Postage 6*d.*

Symposia Reports
Family Life in High Density Housing, with particular reference to the Design of Space about Buildings. Price 10*s.* Postage 8*d.*
Design of Teaching Laboratories in Universities and Colleges of Advanced Technology. Price 7*s.* 6*d.* Postage free.
Design Pays, the Private Enterprise House and its Setting. Price 5*s.* Postage free.

Tender, Form of, for use by Nominated Suppliers
Price 2*d.* per form. Postage 3*d.* 2*s.* 0*d.* per dozen. Postage free.

BOARD OF ARCHITECTURAL EDUCATION

R.I.B.A. (Archibald Dawnay) Trust Prizes 1959. The R.I.B.A. (Archibald Dawnay) Trust Prizes for 1959 have been awarded as follows:

A Prize of £100 to Mr. R. L. Alexander of the School of Architecture, Edinburgh College of Art.

A Prize of £100 to Mr. W. E. Bakewell of the Scott Sutherland School of Architecture, Robert Gordon's Technical College, Aberdeen.

A Prize of £100 to Miss E. Evans of the

Architectural Association School of Architecture, London.

A Prize of £100 to Mr. A. J. Wheeler of the Birmingham School of Architecture.

COMPETITIONS

Metropolitan Cathedral of Christ the King, Liverpool. Full particulars were given in the JOURNAL for September, page 404, but in addition it should be noted that *corporate members of the overseas societies allied to the R.I.B.A.* are also invited to compete.

Last day for submitting designs, 4 p.m. on 3 August 1960. Last day for questions, 15 December 1959.

Design of Shopping Centre and Adjacent Houses, Grangemouth. The Town Council of the Burgh of Grangemouth invite architects registered under the Architects (Registration) Acts to submit in competition, designs for a new Shopping Centre and Adjacent Housing to be erected in Grangemouth.

Assessor: Mr. George Grenfell Baines, M.T.P.I. [*F*].

Premiums: £1,500, £750, £500.

Last day for questions: 12 November 1959.

Last day for submitting designs: 30 January 1960.

Application for the conditions must be made before 5 November 1959, to W. Bryce Johnston, Esq., J.P., M.A., LL.B., S.S.C., Town Clerk, Burgh of Grangemouth, Municipal Chambers, Grangemouth, Stirlingshire. Deposit £2 2*s*. An applicant for the conditions must state his registration number.

Competition for Shopfront Designs. The Glass Benders' Association (acting in consultation with the National Association of Shopfitters) invites architects, shopfitting designers and others to submit designs in competition with the object of showing the effective use of bent glass in shopfront design. Designs are required for:

(*a*) a shopfront 18 ft. wide × 10 ft. high, and
(*b*) a shopfront 48 ft. wide × 15 ft. high.

Assessors: Mr. John Reid [*A*], Mr. Fello Atkinson [*A*], and Mr. L. R. Percival (Director, Pilkington Brothers, Ltd.).

Premiums (in each category): £200, £75, £25.

Last day for submitting designs: 5 p.m., 31 December 1959.

Last day for questions: 31 October 1959.

Conditions may be obtained on application to the Secretary, The Glass Benders' Association, 6 Mount Row, London, W.1.

Extension to County Buildings, Edinburgh. Midlothian County Council invite architects practising or resident in Scotland to submit in open competition designs for an extension to County Buildings, Edinburgh.

Assessor: Mr. J. Wilson Paterson, C.V.O., M.B.E., F.R.I.A.S. [*A*].

Premiums: 750 guineas, 500 guineas, 350 guineas.

Last day for submitting designs: 15 March 1960.

Conditions may be obtained on application to the County Clerk, County Buildings, George IV Bridge, Edinburgh, 1. Deposit £2 2*s*.

Civic Centre, Corby. Last day for submitting designs: noon, 21 December 1959. Full particulars were published in the JOURNAL for July, page 329.

County Offices, Taunton. Last day for submitting designs: 5.30 p.m. on 15 February 1960. Full particulars were published in the JOURNAL for July, page 329.

ALLIED SOCIETIES

Changes of Officers and Addresses

East Africa Institute of Architects. President, G. H. McCullough [*A*]. Hon. Secretary, N. S. Bean, Dip. Arch. [*A*], P.O. Box 30043, Nairobi, Kenya Colony. The Institute's new P.O. Box number is 4258, Nairobi.

GENERAL NOTES

Sundridge Park Tripartite Conference. A Tripartite Conference, similar to that held last year, and organised by the L.M.B.A. in conjunction with the R.I.B.A. and the R.I.C.S., will take place at the Sundridge Park Management Centre from the evening of Wednesday 2 December until after lunch on Saturday 5 December.

The Conference will consist of 24 members, eight from each organisation. Two problems of prime importance to the building industry as a whole, which will be selected by the organising committee, will be discussed in syndicate groups and in general discussion. Subsequently, if the recommendations of the Conference warrant it, a report on the same lines as 'Communications in the Building Industry', the report of last year's conference (obtainable from the R.I.B.A., price 2*s*. 6*d*., postage 4*d*.), may be published.

Members attending the Conference should be senior architects who have already attended a management *course*, either at Sundridge Park or elsewhere.

Cost: 25 guineas, fully resident (the amenities of the Management Centre are those of a first-class hotel).

Sundridge Park Tripartite Management Course. Preceding the Tripartite Conference will be a *management course*, consisting of eight members from each of the three organisations. It will be held from 11 o'clock on Monday 30 November until after lunch on Wednesday 2 December.

The Course is intended for those who have not yet attended a top-level management course, and will consist of lectures and discussions on the general principles of management as they apply to the building industry as a whole.

Cost: 22 guineas, fully resident.

Applications are invited for both the Conference and the Course; they should be addressed to Anthony Williams, Assistant Secretary, R.I.B.A., and should be received by 7 November at the latest.

The British School at Rome: Rome Scholarship in Architecture. The Faculty of Architecture of the British School at Rome have had under review the conditions of the Rome Scholarship in Architecture, funds for which are provided by the R.I.B.A.

The faculty recognise that, although many young architects would wish to avail themselves of the benefit of a period of study and travel in Italy and the Mediterranean area, the time now needed to qualify for their profession may deter many students from entering a competition of long duration, followed by two years' further study abroad.

The faculty have therefore revised the regulations in two important particulars:

(1) The competition has been shortened and it may be taken soon after a candidate has completed his final School (or final R.I.B.A.) examination. The winner will thus be able to go to Italy in the late autumn of the year of his graduation.

(2) The Rome Scholar will not be required to hold the Scholarship for more than one year, although it will be open to him to request a second year if he so desires. This extension, if sought, will normally be granted if the faculty are satisfied with the use the scholar is making of his time.

The faculty lay down no specific course of study for Rome Scholars beyond stipulating that the British School at Rome must be their base for travel and study and that their programme must be approved by the faculty. It remains the purpose of the scholarship to provide young architects with an opportunity to examine at first hand the work of the great masters of all periods, but Rome Scholars are not precluded from interesting themselves also in modern Italian developments, many of which illustrate strikingly the influence of tradition and environment on a living architecture.

The revised conditions may be obtained from the Honorary General Secretary, British School at Rome, 1 Lowther Gardens, Exhibition Road, London, S.W.7.

N.F.B.T.E. to Study the Radcliffe and Cohen Reports. The Executive Committee of the N.F.B.T.E. has appointed a Special Committee to study the Radcliffe Report on the Working of the Monetary System and the Cohen Report on Prices, Productivity and Incomes. It will be the task of this Special Committee to examine the implications and proposals contained in both reports so far as the building industry is concerned so that the Federation may determine any action which might be required.

Society of Architectural Historians of Great Britain. Forty members of the Society attended a conference in Norwich from 11 to 13 September. On the Friday evening members and their guests were received by the President of the Society, Professor R. A. Cordingley [*F*] at an informal reception in the Norwich Assembly House. An illustrated lecture surveying the Norwich architectural scene from early times to the present day was then presented by Mr. Eric Fowler, the well-known Norfolk writer, and this was followed by a buffet supper.

Activities on the Saturday included visits to Blickling Hall, East Barsham Manor, Holkham Hall (where members gathered in the great marble salon to hear Mr. R. W. Ketton-Cremer lecture on the early history of the house and its owners) and Sheringham Hall (where the owner, Mr. Tom Upcher, gave a fascinating account, based on family records, of the building of this delightful Repton house). In the evening a dinner was held in the Norwich Assembly House when the principal guests were the Lord Mayor of Norwich and the Headmaster of the Norwich Grammar School, Mr. Andrew Stephenson.

On Sunday members heard a paper by Mr. John Harris of the R.I.B.A. Library on 'Inigo Jones and Raynham Hall' and tours were arranged covering the more important monuments of the city. After lunch Sir John Summerson [*A*] lectured on 'Wanstead, Houghton and Holkham' and to this occasion the Society was pleased to welcome members of the local architectural society.

During the conference an exhibition of drawings related to Norfolk buildings from the R.I.B.A. Drawings Collection, augmented by examples from local collections, was on view. The local organiser for the conference was Mr. Donovan Purcell [*F*].

Membership of the Society of Architectural Historians is open to all interested in the history of architecture and the Honorary Secretary, Mr. Frank I. Jenkins [*A*] will be pleased to answer queries regarding membership addressed to him at the University of Manchester.

R. S. Reynolds Memorial Award. The note on this award which appeared in the September JOURNAL, page 404, gave the information that nomination forms were obtainable from the A.I.A., Washington. Since then a number of nomination forms have arrived at the R.I.B.A., and are obtainable on application to the Secretary.

University of Sydney, Australia. Lectureship in Architecture. Applications are invited for the above position. The duties of the Lecturer will include responsibility for practical studio instruction in the First and Second Years of the course as well as appropriate lecture courses.

The salary for a Lecturer is within the range £A1,500–90–£2,100 per annum, plus cost of living adjustment and will be subject to deductions under the State Superannuation Act. The commencing salary will be fixed according to the qualifications and experience of the successful applicant.

Under the Staff Members' Housing Scheme, in cases approved by the University and its Bankers, married men may be assisted by loans to purchase a house.

Further particulars and information as to the method of application may be obtained from the Secretary, Association of Universities of the British Commonwealth, 36 Gordon Square, London, W.C.1. Applications close in Australia and London on 24 November 1959.

University of Auckland, New Zealand. Chair of Architectural Construction. Applications are invited for the above-mentioned post. The salary will be £2,190 per annum and an allowance will be made towards travelling expenses.

Further particulars and information as to the method of application may be obtained from the Secretary, Association of Universities of the British Commonwealth, 36 Gordon Square, London, W.C.1. Applications close on 30 November 1959.

The John Edward Worth Prize. The Royal Society of Health announces that the John Edward Worth prize competition offers a prize of 50 guineas for the best essay on 'The design and equipment of living accommodation for the use of able-bodied elderly couples and single persons, including the conversion of existing large houses for their need'. Full details can be obtained from the Royal Society of Health, 90 Buckingham Palace Road, London, S.W.1.

Formation of the Manchester Building Centre Limited. The Manchester Building Centre Limited has been formed with the support of The Building Centre London, to whom it is affiliated.

The objects of The Manchester Building Centre Limited are similar to those of The Building Centre London. There will be an unbiased information service and space for lectures and visiting exhibitions.

All Fellows and Members of Council will be honorary, and any surplus revenue derived from the letting of space to manufacturers will be expended under the terms of the Constitution on expanding the services of The Manchester Building Centre Limited and on architectural and building education and research.

Prior to the appointment of a permanent Council, the Organising Committee is: Eric S. Benson, M.B.E., M.A., Dip.T.P. [*F*], Raymond O. Gerrard, M.A., John P. Griffiths, Dip.Arch. [*A*] (Director), Leonard C. Howitt, M.Arch., D.A.(Manc.), Dip.T.P., M.T.P.I. [*F*], Frank Hyams, F.R.I.C.S., F.I.Arb., Haydn W. Smith [*F*] (Chairman), William G. Thorpe, M.B.E., F.I.O.B., J. R. Townson, F.I.O.B., F. R. Yerbury, O.B.E. [*Hon. A*] (representing The Building Centre London.)

The Centre is supported by professional societies and the industry.

Correspondence is being dealt with by the Director, Mr. John P. Griffiths, at the temporary office in the Department of Building, The College of Science and Technology, Sackville Street, Manchester 1.

Obituaries

Robert Scott Brown, B.Arch.(Rand.) [*A*], died tragically in a motor accident near Philadelphia, U.S.A., on 7 June 1959, aged 27.

M.L.R. writes:—

'Robert matriculated at Michaelhouse, Natal, South Africa, and studied architecture at Witwatersrand University and later at the A.A., London.

'After periods of work and travel in Africa and Europe, Robert and his wife Denise began a further period of study in City Planning at the University of Pennsylvania in September 1958. Robert's death interrupted a career which had already earned him high praise and it is the opinion of eminent men that, in him, South Africa has lost a young son who had the potential of making a great contribution to the future of the country.

'It was not only his outstanding results in academic life which earned Robert this respect, which was shared by everyone who came into contact with him. He set himself very high standards and exercised his talents with earnestness and sincerity. He was reserved but prepared to share his life with his friends, to let his quiet humour and gentleness temper their lives. But, always, one was aware of Robert's tremendous strength of character and belief in the highest principles which guided him in his dealings with all people.

'It must be a source of great pride and comfort to those near Robert to realise what a strong impact his short life made on those around him. His many, many friends will never forget his warmth and his high aims. In some small way the purpose given to their lives in this way may be a living memorial.'

Arthur Guy Chant [*F*], died on 9 August 1959, aged 73.

Mr. John H. Haughan [*F*], County Architect, Cumberland, has supplied the following note:

'Arthur Chant, the former County Architect of Salop, was the son of a Methodist Minister. He was educated at Kingswood School, Bath, and served his articles with a West Country architect. Methodism moves its ministers around the country, so by the time that Arthur Chant had completed his articles he joined his parents in Lancashire and became a member of the Lancashire County Architect's Department.

'Prior to the outbreak of the 1914–18 War, he had taken up a post with the County Architect of the East Riding. The war saw him serving abroad with a commission in the R.E.'s.

'In November 1919 he became Deputy County Architect to the Cumberland County Council. On leaving Cumberland, he went to the Birmingham Education Architect. From there in 1930 he went to Shrewsbury, as County Architect to the Salop County Council.

'He retired in 1951, after seeing his office grow, in response to the large programme, from an original staff of five to over 70.

'In 1942 he was one of the founders of the County Architects' Society. From the very first meeting which he attended he threw himself into the task of helping to make it the success which it became. For eight years he was its Secretary and the members of that Society showed their appreciation of his splendid services by unanimously electing him President in 1950–51—an honour which touched him. On his retirement he was made a Life Honorary Member.

'Arthur Chant's sudden death will come as a shock to many of his colleagues. Those who knew him well will ever carry a mental picture of his slight, wiry and always hatless figure, a picture of health and fitness for his age.

'He lost his only son in the R.A.F. during the war. In his memory he dedicated to the R.A.F. Benevolent Fund the profits of a book of religious poetry—*The Legend of Glastonbury*. He had several publications to his credit including some extremely successful books for children.

'A keen lover of music, he was organist for his church. For its funds he had written a sacred cantata. His Christianity was that of a sincere believer—it was part of his daily life.

'Those of us who knew him best will ever remember his whimsical humour, his ability to laugh at himself and above all the wit and sparkle of his conversation. No subject was too dull, no item of discussion was too ponderous to be enlivened by some humorous quip or aside—truly a worthy friend.'

Frederick Bayliss Nightingale [*Retd. F*], died on 17 July 1959, aged 71.

Mr. Nightingale received his training at the Royal College of Art and was articled to Mr. Beresford Pite [*F*]. Then as assistant to Mr. W. A. Pite [*F*], who was architect of King's College Hospital, Denmark Hill, he acted as Clerk of the Works. He was subsequently an assistant to Edwin Lutyens until the First World War, when he joined up and was in the army until 1920, finally acting in a senior position in the War Graves Commission.

After demobilisation he went into partnership with Mr. George Kennedy. Together they were responsible for many houses all over the British Isles, including Moon Hall, Shere; Bibury Court; and Tilton, Firle. Other work included the Arts Theatre, Cambridge; the Chenil Galleries, Chelsea; extensions and alterations to King's College, Cambridge; St. Catherine's College, Balliol College, Oxford; Caldicot School, and Gordonstoun School; and the lecture hall for the Royal Geographical Society.

The partnership ended at the beginning of the Second World War, when Mr. Kennedy went as a classics master to Gordonstoun School and Mr. Nightingale joined the Royal Engineers. The latter served in Egypt and then at the War Office in London, where he was badly injured in an air raid in 1942. Mr. Kennedy died in 1954.

After the war Mr. Nightingale was attached to the Civil Service as Architectural Adviser with the Ministry of Town and Country Planning in the Northern areas, advising specially on National Trust property, ancient monuments, etc. Ill-health forced him to retire in 1952.

Sir Alfred Ernest Shennan, M.A., J.P. [*F*]. **Correction.** Since the appearance of the obituary note on the late Sir Alfred Shennan in the September JOURNAL, we have been informed that the attribution to Sir Alfred of the alteration and rebuilding to Walton Parish Church is not strictly correct, and that while he was responsible for some work on the Lady Chapel, the major operation of rebuilding the whole edifice after war damage was carried out by Messrs. Quiggin and Gee [*F*/*A*].

Members' Column

This column is reserved for notices of changes of address, partnerships vacant or wanted, practices for sale or wanted, office accommodation, and personal notices other than of posts wanted as salaried assistants for which the Institute's Employment Register is maintained.

APPOINTMENTS

Mr. Charles E. Bantin, Dip.T.P. (Lond.) [*A*], has been appointed Assistant District Architect for Ontario for the Federal Government of Canada, Public Works Department. His address is now 12 Combermere Drive, Don Mills, Ontario, Canada.

Mr. John Brandon-Jones [*A*] has been appointed to the Advisory Committee on Buildings of Special Architectural or Historic Interest, one of the committees which advises the Minister of Housing and Local Government. The appointment has been made to fill the vacancy caused by the death of Mr. H. S. Goodhart-Rendel, Past President.

Mr. Brian Hackett, M.A., A.M.T.P.I., F.I.L.A. [*A*], who is Senior Lecturer in Landscape Architecture in the University of Durham, has been invited to fill the Chair of Landscape Architecture of the University of Illinois, U.S.A. Mr. Hackett has accepted this invitation for a period of two years, and will be leaving this country to take up the appointment at the end of this year.

Mr. Douglas Smith, A.M.T.P.I. [*A* 5008], has been appointed Borough Architect and Planning Officer to the Borough of Portadown and his address is now Tavanagh House, Thomas Street, Portadown, Co. Armagh, Northern Ireland.

Mr. Robert B. Thomson [*A*] has been appointed Senior Architect with the National Capital Development Commission at Canberra, Australia.

PRACTICES AND PARTNERSHIPS

Messrs. Booty, Edwards and Partners [*A*] of Kuala Lumpur, Singapore and Brunei, have opened a London office at 17 Sloane Street, London, S.W.1, in association with **Mr. Leslie Gooday** [*A*], who will continue his own private practice at the same address.

Mr. F. Austin Child [*F*] has taken **Mr. W. D. C. Hall** [*A*] into partnership under the style of **Austin Child and Donald Hall** at 6 Archbold Terrace, Newcastle upon Tyne 2.

Mr. Jack E. Dalling [*L*] has taken **Mr. John Ward** [*A* 13371] and **Mr. Lee Reading** [*A*] into partnership under the style of **J. E. Dalling and Partners** at 53 St. Martin's Lane, London, W.C.2.

The partnership between **Mr. Derby Fazackerley** [*L*] and **Mr. F. N. Pinder** [*F*] of 19–20 Ribblesdale Place, Preston, was dissolved on Mr. Pinder's retirement on 30 September. Mr. Fazackerley is now practising on his own account from the same address under the title **Derby Fazackerley.**

Messrs. Alec F. French and Partners [*F*/*L*], of Halifax House, St. Augustine's Parade, Bristol 1, and Pearl Assurance House, Royal Parade, Plymouth, have taken **Mr. M. C. Collings** [*A*] into partnership. The name of the firm will remain unchanged.

Mr. David Gill [*A*] has started practice at 28 Ailsa Road, St. Margarets-on-Thames, Middlesex (Popesgrove 0521), where he will be pleased to receive trade catalogues, etc.

Mr. Robert S. Grinling [*A*] has retired from **Messrs. Tripe and Wakeham** [*AA*] of 16 Fitzhardinge Street, London, W.1, and is now practising from 2 Halkin Street, Hyde Park Corner, London, S.W.1 (Belgravia 6595).

Mr. Eric G. V. Hives [*L*] has taken his two sons, **Mr. Colin V. Hives** [*A*] and **Mr. John G Hives** [*A*], into partnership under the style of **Eric G. V. Hives and Sons.** The practice will be conducted from 46 Queen's Road, Reading, Berks (Reading 55484–5), 80 Wimpole Street, Cavendish Square, London, W.1 (Welbeck 0012–3), and 21 Market Place, Derby (Derby 48922).

Mr. A. D. Knapton [*F*], of **Messrs. Knapton and Deane,** has taken **Mr. O. E. Thompson** [*A*] into partnership. The firm will continue to practise under the same style at 6 Martin Lane, London, E.C.4.

Mr. Frederick MacManus [*F*] has taken **Mr. Francis Cruice Goodall** [*A*] into associate partnership. The practice will be continued as previously under the style of **Edward Armstrong and Frederick MacManus,** from 28 Gloucester Place, Portman Square, London, W.1 (Welbeck 2273).

Mr. Jack Marks [*A*] has started private practice at 15 Weekday Cross, Nottingham, where he will be pleased to receive trade catalogues and all other relevant architectural information.

Mr. Arthur A. J. Marshman [*A*] has commenced private practice at 37 High Street, Bedford (Bedford 68143), and at 14 Ecton Lane, Overstone, Northants, and he will be pleased to receive trade literature.

The firm of **Messrs. Harold S. Scott** [*AA*] will in future be known as **Messrs. John S. Scott** [*F*/*A*] and will continue to practise from Kings Court, 115–117 Colmore Row, Birmingham 3.

Mr. Ian Tweedie [*A*] who has been practising from 40 Melville Street, Edinburgh, since 1957 will be pleased to receive recent trade literature at this address.

CHANGES OF ADDRESS

Mr. John E. Baldwin [*A*] has changed his address to 17 Daleside, Upton by Chester, Cheshire.

Mr. William Adin Clarke [*A*] has changed his address to 17 Sketty Avenue, Sketty, Swansea, Glamorganshire (Swansea 23670).

Mr. James H. Cox [*A*] has changed his address to 12 Rickfords Hill, Temple Square, Aylesbury, Bucks.

Mr. L. Darbyshire [*F*] has changed his address to 42A The Ropewalk, Nottingham (Nottingham 44981), where he will be pleased to receive trade catalogues.

Mr. John W. Francis [*A*] has changed his address to Department of Architecture, Nigerian College of Technology, Zaria, Northern Nigeria.

Messrs. Godwin and Hopwood (John Godwin [*A*] and **Gillian Hopwood** [*A*]) have moved their office to 27 Boyle Street, Lagos, Nigeria. The postal address Private Mail Bag 2148 and the telephone number 20415 remain unchanged.

Mr. Rolf Hellberg [*F*] and **Mr. Maurice Harris** [*F*] of Coventry have opened a branch office at 10 Rumford Place, Liverpool 3, where they will be pleased to receive trade literature.

Mr. Arthur F. Hobbs [*A*] has changed his address to 59 Tyrrells Road, Billericay, Essex.

Mr. James K. Hunt [*A*] has changed his address to 1 Rudyard Place, St. Annes-on-Sea, Lytham St. Annes, Lancs.

Mr. H. Owen Luder [*A*] of 79 Regency Street, Westminster, London, S.W.1, has changed his telephone number to Victoria 2171–2.

Messrs. Dyneley Luker and Moore (J. A. Crabtree [*A*], **H. T. P. O'Shea** [*L*], **S. H. Moore** and **R. H. B. Wilson**) have changed their address to 43 Welbeck Street, W.1 (Welbeck 0697).

Mr. Antony D. Newall [*A*] has changed his address to 'The Rise', Lythbank, Shrewsbury, Shropshire.

Mr. H. Noak [*A*] has opened an office in Lusaka, Northern Rhodesia, and will be pleased to receive trade literature at P.O. Box 1341, Lusaka.

Mr. P. Noel Perkins [*A*] has changed his address to 50 Baker Street, London, W.1.

Messrs. Turner and Kitching [*AA*] have changed their address to 137 Windmill Street, Gravesend, Kent. Their telephone number remains Gravesend 6996.

Mr. E. W. H. Vallis [*L*] retired from the office of County Surveyor, Kent, in June last and his present address is 4 Faraday Road, Maidstone, Kent. Mr. Vallis will not continue to practise.

Mr. H. C. Wilson [*A*] has changed his address to 'Tangle Trees', Oldfield Road, Bickley, Kent.

PRACTICES AND PARTNERSHIPS WANTED AND AVAILABLE

Associate (39), with 17 years' varied experience, including eight years as principal on own account, seeks partnership with older member wishing to retire gradually from practice. Preferably eastern counties north of London. Some capital available. Box 75, c/o Secretary, R.I.B.A.

Associate (Dip. Arch.) and surveyor, own small practice and premises in London over 20 years, would like to join well-established progressive firm where own connections could be developed to fuller advantage. Ultimate aim if suited: amalgamation/partnership. Some capital available. Box 82, c/o Secretary, R.I.B.A.

Partnership wanted, or responsible position leading thereto, in established practice, London or southern counties, by Associate and A.M.T.P.I. (37). Wide experience at home and abroad in design and control of contracts up to £1,000,000. Single. Car owner. Capital available. Box 83, c/o Secretary, R.I.B.A.

Associate, with active practice in Canada for the past seven years, desires to return to the U.K. and would be interested in a partnership with a progressive firm. London or the Home Counties preferred, but not essential. Some capital available. Box 85, c/o Secretary, R.I.B.A.

Associate (33), who has an increasing volume of work, is desirous of joining either an established firm as junior partner, or taking over a practice from retiring member in the London area. Capital would be available if required. The present practice consists of contemporary work, the member, however, has experience in the restoration of building and traditional work. Box 86, c/o Secretary, R.I.B.A.

London architects have opening for fully qualified architect, age 30–40, with view to partnership. Box 87, c/o Secretary, R.I.B.A.

ACCOMMODATION

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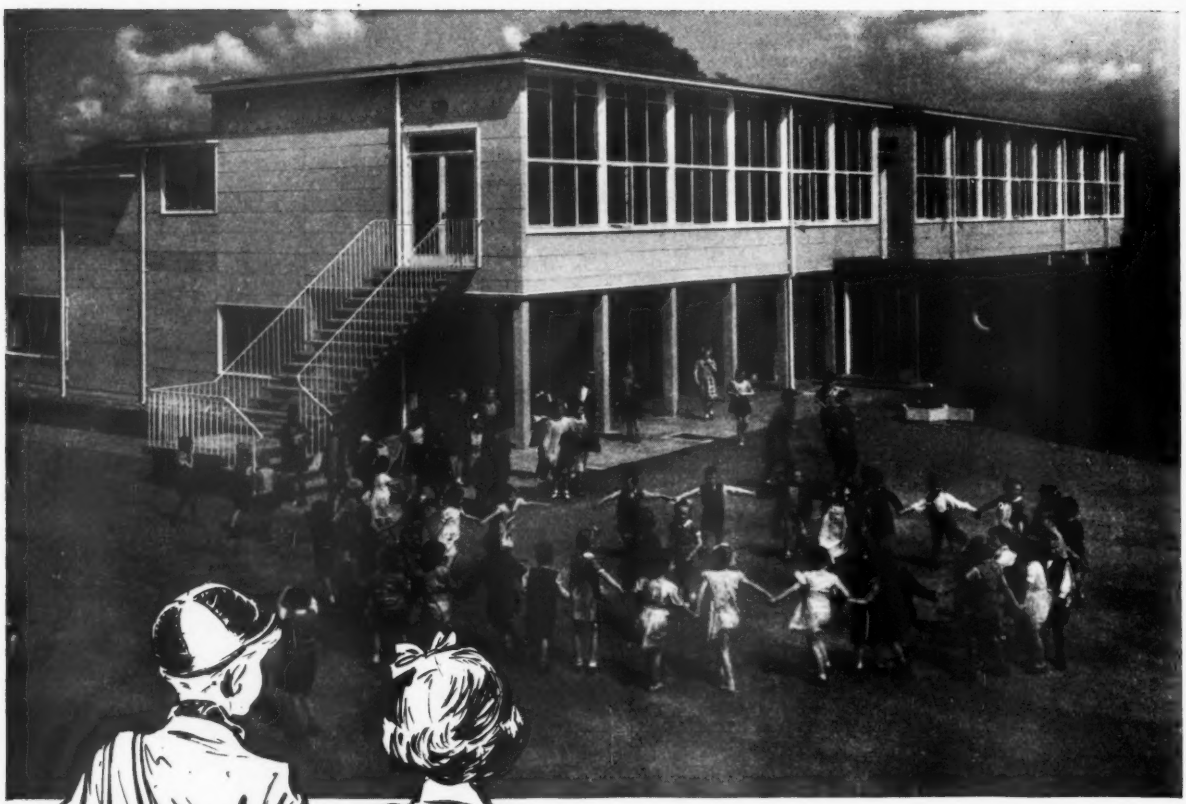

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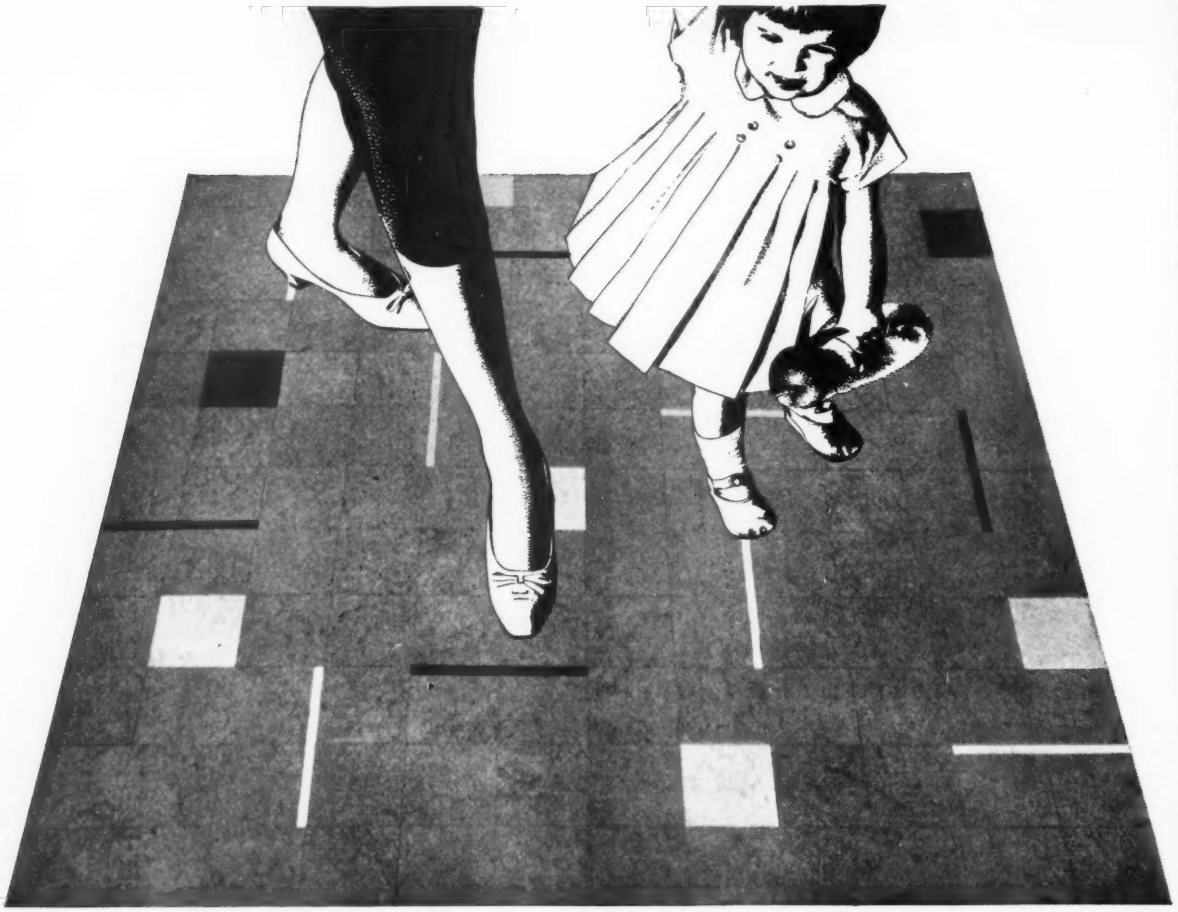

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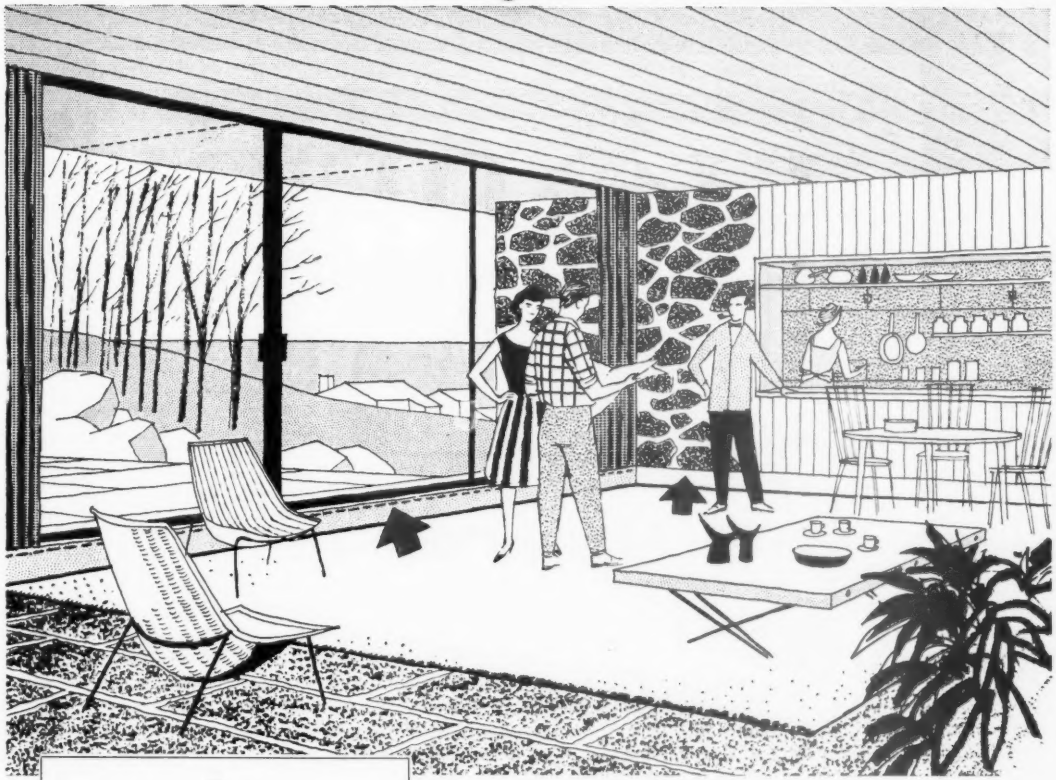

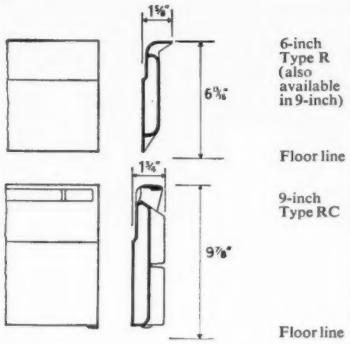

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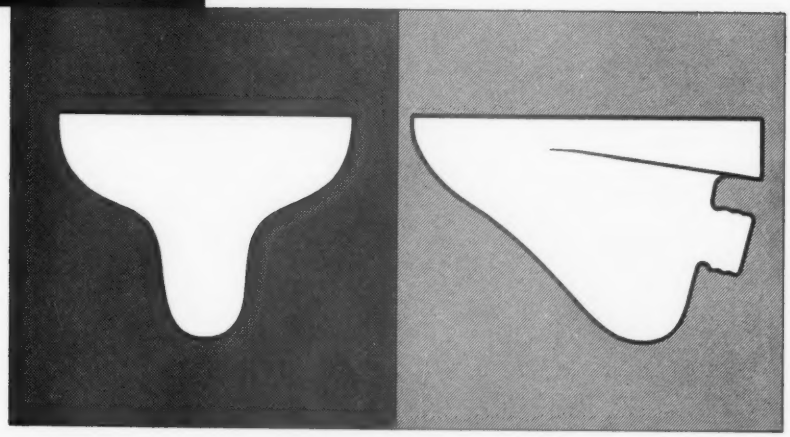

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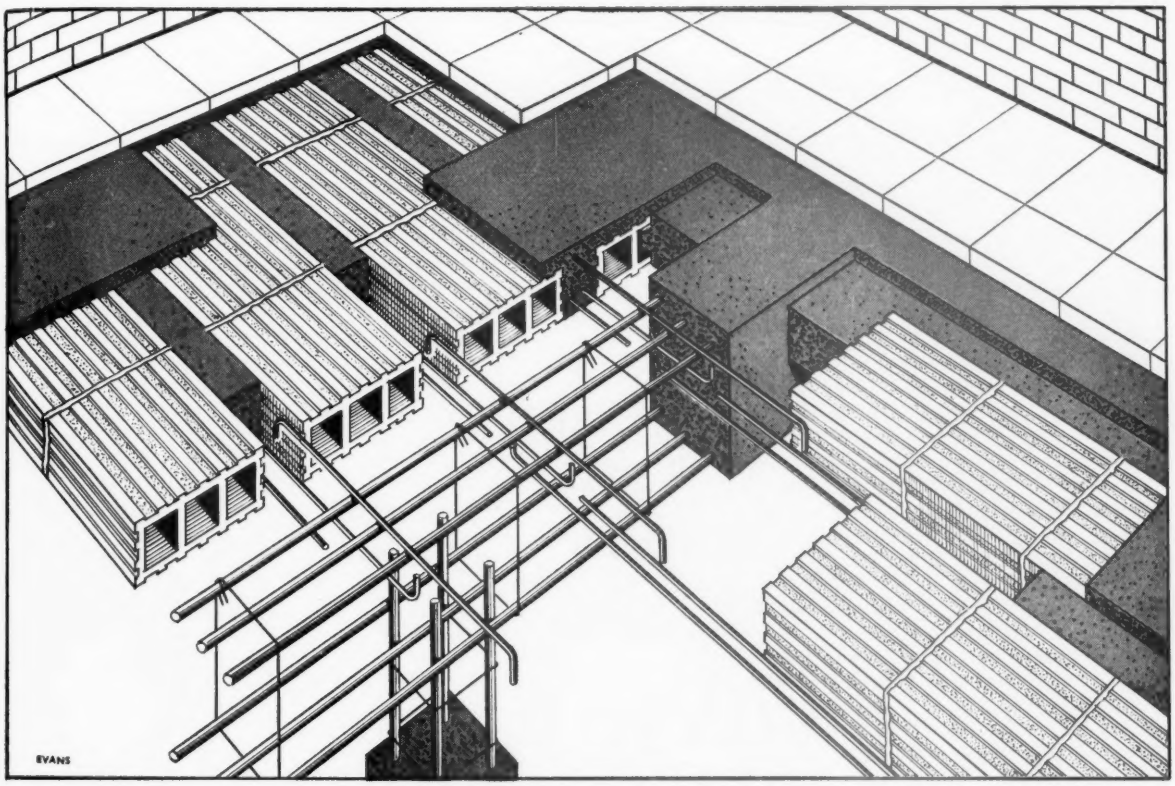

We wish to thank the Kleine Company Ltd. for their co-operation in the compilation of this advertisement.

THE PRODUCT The depth of a Hollow Clay Block Floor, the thickness of the topping or screed of concrete above the blocks, the width of the beams or ribs between rows of blocks and the size, the number and location of the reinforcing steel placed in the ribs, are all governed by the span of the floor and the loading it has to carry. 'Phorpres' Hollow Clay Floor Blocks are specially made for *in situ* floor construction; they are all 12″ long by 12″ wide, but they are available in eight different thicknesses ranging from 3″ to 10″ in multiples of one inch, so that any normal span and loading can be accommodated. All the blocks are grooved to give a good dovetail key, both for the ceiling plaster and for the *in situ* concrete. Filler Tiles, which are also grooved, are available to provide a burnt clay soffit to the ribs, so that the floor can be given a completely all-clay soffit with its attendant advantages. These Filler Tiles (which can also be used as panelheating tiles) are made in three sizes: 12″ × 3″ × ⅝″, 12″ × 4″ × ⅝″, 10″ × 5″ × ⅝″.

METHOD OF CONSTRUCTION To build an *in situ* Hollow Tile Floor, 'Phorpres' Floor Blocks of a suitable depth are laid end to end in rows on temporary shuttering of steel or timber. The rows of blocks are so spaced that the gaps between rows correspond to the designed width of the reinforced ribs. If an all-clay soffit is required, Filler Tiles are laid at the bottom of the position, good quality concrete is carefully placed around the reinforcement, in the rib space, and over the top of the blocks (to the thickness of topping required by design), all in one operation. After the necessary time needed for the concrete to gain strength, the temporary shuttering is removed, leaving an all-clay soffit ready to receive the plaster.

THE ADVANTAGES ***Strength.***—Properly designed *in situ* Hollow Tile Floors possess great strength combined with light self-weight. The good bonding between the concrete and the grooved blocks ensures that the stresses from concentrated loads are well spread over the structure, and the monolithic character of the floor makes it particularly suitable where vibrations from sources are to be expected.

Adaptability.—The *in situ* Hollow Tile Floor can be designed for wide spans without intermediate supports. Moreover, bays need not necessarily be rectangular on plan and can be constructed to almost any plan shape without undue extra cost. Cross-reinforced floors, needing no secondary beams, may be built with uninterrupted soffits. The Hollow Tile Floor, with its strength and weight-saving properties, is also particularly suited to the construction of cantilevered balconies, etc.

Heating.—Panel heating, heating coils, air-conditioning ducts and mains services may be incorporated in the floor during the construction stage.

Fire Resistance.—Protection to the concrete and reinforcing steel, provided by the fired Clay Blocks and Filler Tiles, gives the *in situ* Hollow Tile Floor excellent resistance against fire.

A hollow tile floor is a quality floor

PHORPRES

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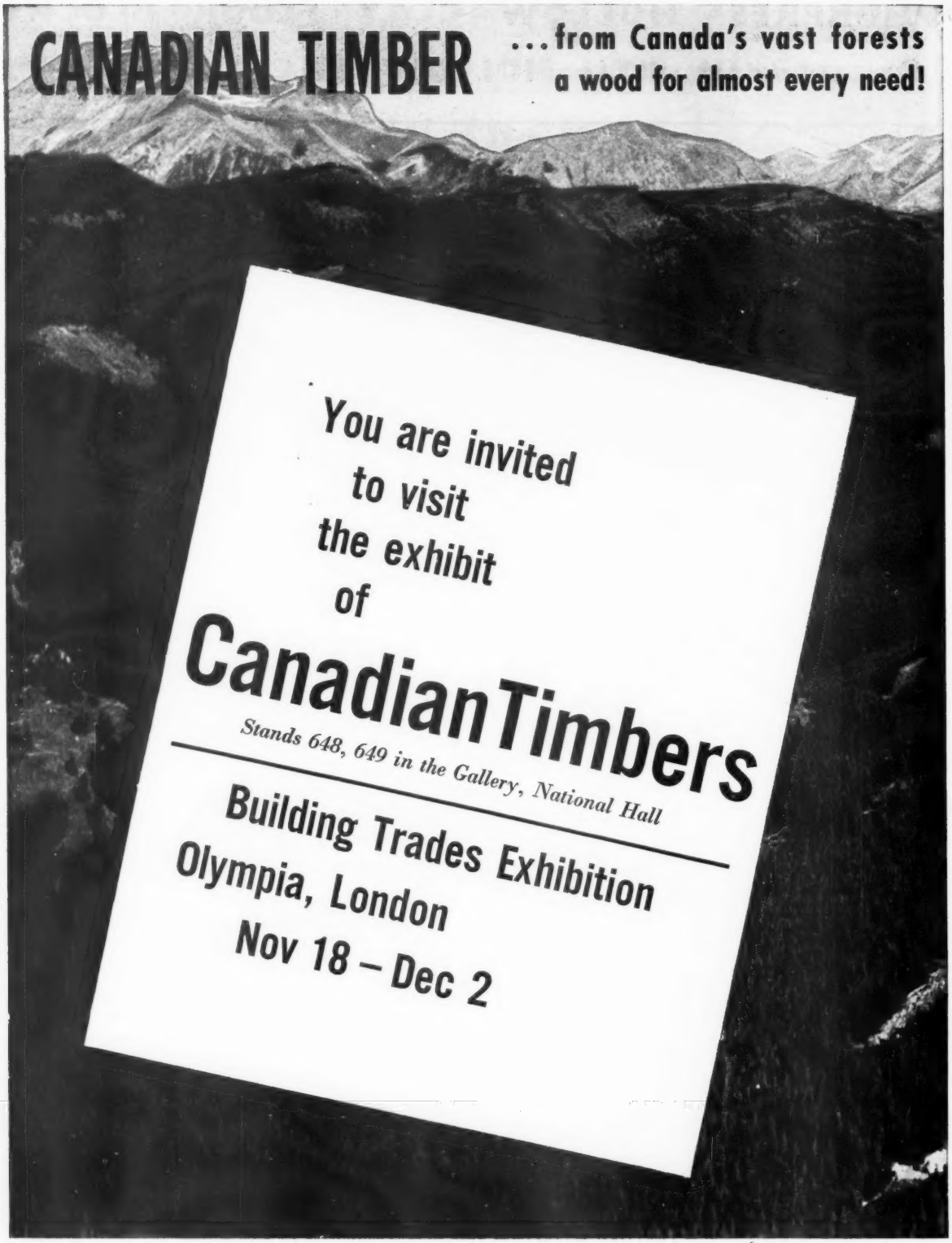
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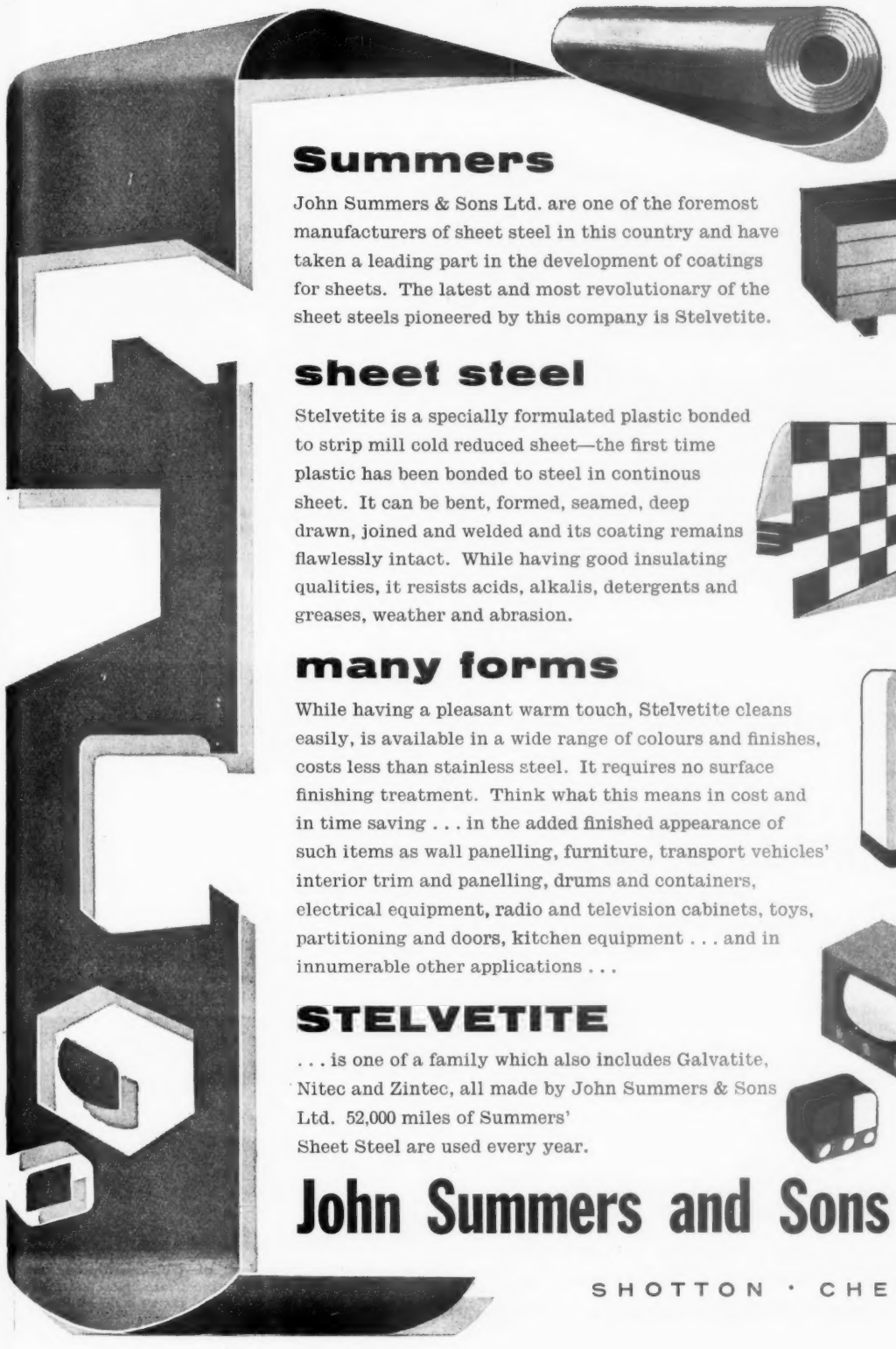
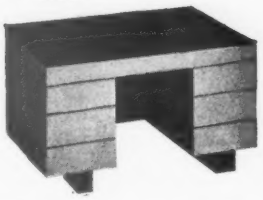


Summers

John Summers & Sons Ltd. are one of the foremost manufacturers of sheet steel in this country and have taken a leading part in the development of coatings for sheets. The latest and most revolutionary of the sheet steels pioneered by this company is Stelvetite.

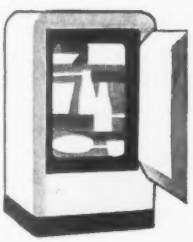


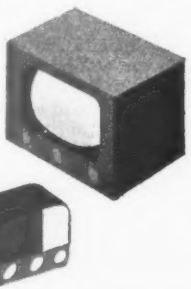
sheet steel

Stelvetite is a specially formulated plastic bonded to strip mill cold reduced sheet—the first time plastic has been bonded to steel in continous sheet. It can be bent, formed, seamed, deep drawn, joined and welded and its coating remains flawlessly intact. While having good insulating qualities, it resists acids, alkalis, detergents and greases, weather and abrasion.

many forms

While having a pleasant warm touch, Stelvetite cleans easily, is available in a wide range of colours and finishes, costs less than stainless steel. It requires no surface finishing treatment. Think what this means in cost and in time saving . . . in the added finished appearance of such items as wall panelling, furniture, transport vehicles' interior trim and panelling, drums and containers, electrical equipment, radio and television cabinets, toys, partitioning and doors, kitchen equipment . . . and in innumerable other applications . . .





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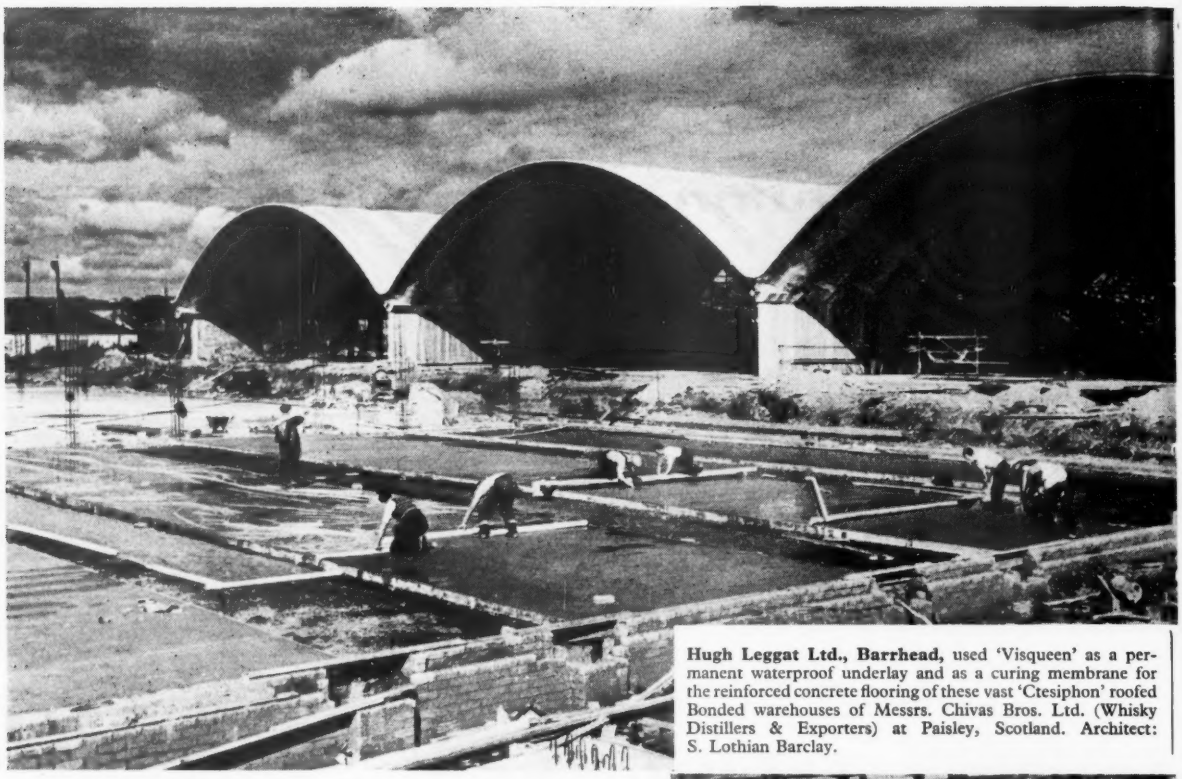

Hugh Leggat Ltd., Barrhead, used 'Visqueen' as a permanent waterproof underlay and as a curing membrane for the reinforced concrete flooring of these vast 'Ctesiphon' roofed Bonded warehouses of Messrs. Chivas Bros. Ltd. (Whisky Distillers & Exporters) at Paisley, Scotland. Architect: S. Lothian Barclay.

Progressive Builders fight rising damp with **VISQUEEN** TRADE MARK **polythene sheeting**

FAILURE TO PROVIDE efficient protection against rising damp and chemical attack, can involve a contractor in extensive and costly repairs. Now, by using 'Visqueen' building sheet these risks can be eliminated.

Laid under the ground floor rafts of houses, or under concrete flooring in factories or warehouses it will provide a complete seal against liquid water and an efficient barrier to water vapour. Furthermore, on sites where the sulphate content of the subsoil is high, the acid-resisting qualities of 'Visqueen' will ensure life-time protection for floor coverings and adhesives. 'Visqueen' is easy to handle, the wide widths easy to lay.

No jointing compounds or heat sealing are necessary – just a single overlap or a double welt type fold and protection is complete. 'Visqueen' is cheaper than other conventional oversite membranes.

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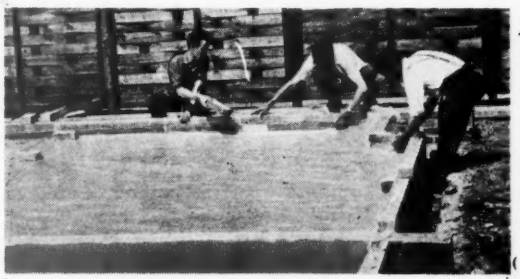


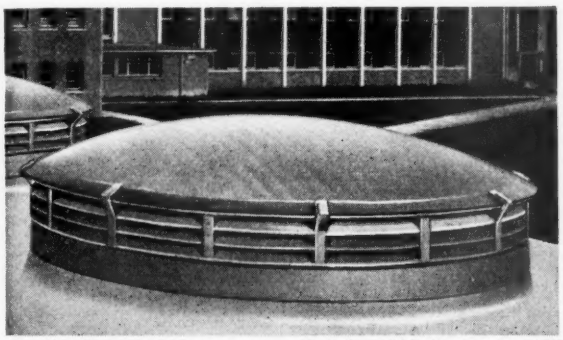
Unity Structures Ltd., London, laying 'Visqueen' 500 (heavy weight) as a damp-proof membrane between the hardcore and concrete flooring of these two semi-detached prototype houses built by them at Ruislip. The film was laid over the hardcore in 12 ft. widths in one continuous strip over the party walls, and incorporated into the cavity wall with the D.P.C.

John McLean & Sons Ltd. of Wolverhampton, use 'Visqueen' sheeting as a damp-proof membrane under the ground floor rafts of their "Beverley" houses in the Midlands. Architects: Diamond Hodgkinson & Partners.

Ventilation *plus* daylight

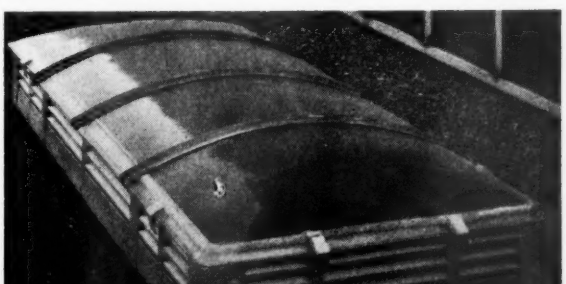
WITH GREENWOOD-AIRVAC ROOFLIGHT VENTILATORS

Specifically designed to give both low overall height and unobtrusive appearance, the Greenwood-Airvac patented range of Dome and Continuous Rooflight Ventilators provides fully weathered controllable or permanent ventilation with maximum daylight.



Circular Dome ventilators are supplied from 18″ diameter to 72″ diameter. This is one of a number of units installed at the Gormanstown Franciscan College, Co. Meath. *(Architect: John C. Thompson, B. Arch., A.R.I.B.A.)*

Rectangular dome ventilators are available from 30″ × 30″ to 48″ × 72″. Large numbers have been specified by the Chief Architect at Crawley New Town. *(Chief Architect: H. S. Howgrave-Graham, A.R.I.B.A., A.M.T.P.I.)*



This Half Dome End Continuous Rooflight Ventilator is one of twenty 8′ 0″ x 4′ 0″ units at S.E.G.B. Belvedere Generating Station, Kent. Available in extended lengths from 8 ft. with nominal widths up to 6 ft. *(Architects: Farmer & Dark F/F.R.I.B.A.)*

Gable End Continuous Rooflight Ventilators 16 ft. long x 5 ft. 2 ins. wide were installed on the Textile Paper Tube Factory, Romilly, Cheshire. Supplied in extended lengths from 4 ft. with nominal widths up to 7 ft. *(Architects: Arthur Swift & Partners.)*

Illustrated technical leaflets on the full range of Dome and Continuous Rooflight Ventilators are available on request.

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CHANCERY 8135 (4 lines). 'Grams: 'AIRVAC', LONDON

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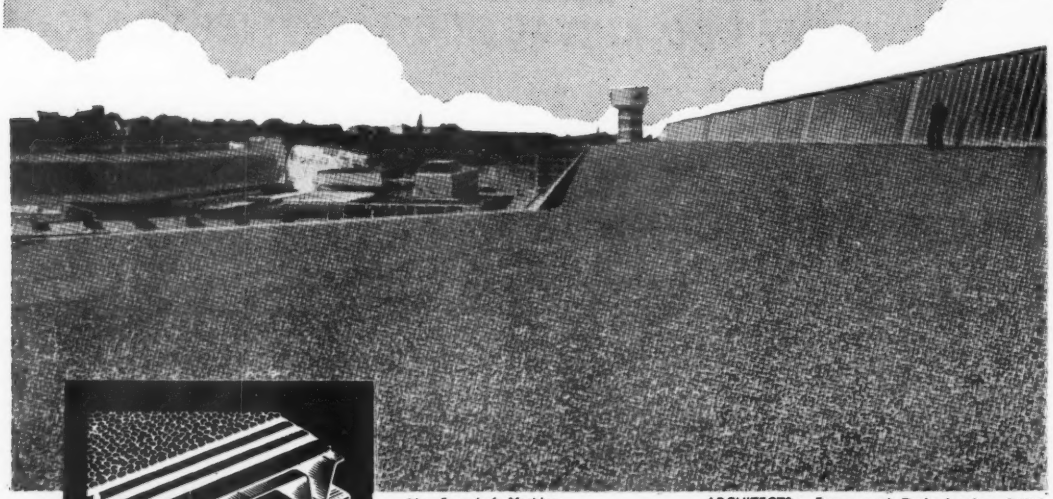

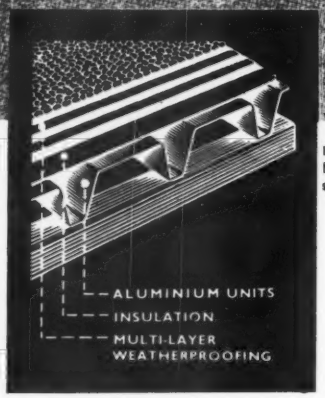

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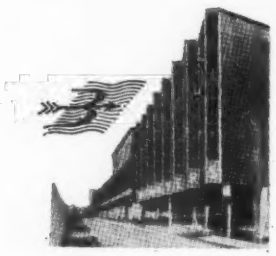

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- ✳ Because it is insulated to conserve heat and reduce fuel costs.
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In harmony with their International reputation for quality, The Bowater Paper Corporation specified "BITUMETAL" for their new mills at Northfleet, Kent. This modern development in Roofing is accepted by Architects throughout the world as a new standard of perfection, and in addition to the obvious advantage mentioned above, it provides roof and ceiling in one unit. A further advantage is that it is speedily erected with economy in Construction. Full technical details can be obtained from any of the undernoted area offices :

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JOURNA

PLATFORM HOIST

for Barclays Bank Limited

The hoist shown in the illustration was recently installed at Barclays Bank Limited, High Street, Crawley, Sussex, and is used to take trolleys loaded with bullion, ledgers, etc. from the strong room in the basement to the banking room on the ground floor.

J. & E. HALL

LIMITED

DARTFORD, KENT

LONDON OFFICE

10 ST. SWITHIN'S LANE, E.C.4

ARCHITECT: Frank Senior, A.R.I.B.A.

'Ah, good morning, my man!' said Baron Rabbit. 'I want to buy a pipe.'

'Yes, your excellency,' said the tobacconist respectfully. 'We have some fine old briars, or perhaps a meerschaum, or a clay pipe – but O no, your worship wouldn't want anything so insignificant as that – '

'Insignificant ? ' cried the Baron. 'Clay pipes are glorious ! Salt glazed clay is well-nigh impervious ! It's acid-resistant ! Immune to moulds and fungus ! Can't be scratched by sand or grit ! Copes with all kinds of effluents for centuries on end ! '

'Yessir, yessir ! ' said the tobacconist. 'Will you take your clay pipe or shall I send it ? '

'Keep it for now,' said the Baron. 'I'll send my butler down to collect it ! '

Salt Glazed Clay Pipes – for drainage, for ever

NATIONAL SALT GLAZED PIPE MANUFACTURERS' ASSOCIATION

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SISCOMATTE is the leading rubberised paint in Britain. It has been specified by architects throughout the country for kitchens, bathrooms, canteens, factories, and other situations where steam or condensation presents a problem. They have chosen Siscomatte because:

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(c) It is the easiest Wall Paint there is to apply.

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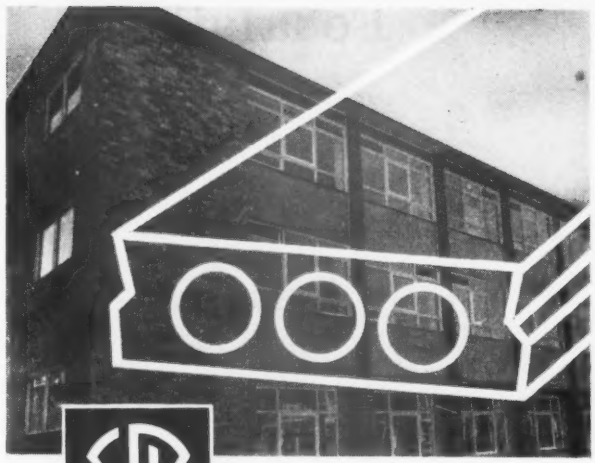

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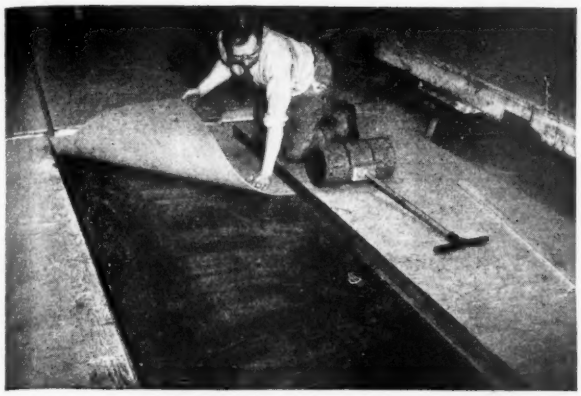

Prefabricated fir plywood sub-floors are featured in the transportable buildings manufactured by Swiftplan Ltd. of Middlesex. This company uses Canadian fir plywood structurally for prefabrication of floors and roofs in schools, office blocks, cottages and construction site buildings.

fir plywood for trouble-free sub-floors

Smooth sub-floors of structural fir plywood stay permanently ridge free under tile, linoleum, carpet or hardwood. Low cost sheathing and underlay sheathing grades are obtainable in thicknesses from $\frac{1}{4}$" to $1\frac{1}{4}$". Light, strong fir plywood panels cover 32 sq. ft. at a time without cutting or waste. All Canadian fir plywood marked PMBC exterior is bonded with waterproof and boilproof phenolic glue. Ask your timber and plywood supplier about prices. For free technical data on structural applications of Canadian fir plywood write :

PLYWOOD MANUFACTURERS ASSOCIATION OF BRITISH COLUMBIA
Wheatsheaf House, 4 Carmelite Street, London, E.C.4.

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Contractors Rush & Tompkins Ltd. put down 500,000 sq. ft. of removable fir plywood panels to give the new John Lewis & Co. Ltd. Store in London great flexibility in routing of under-floor electric and water services. Screw-fastened sub-floor panels give easy access to utilities and provide a perfectly smooth surface for carpeting and linoleum.

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A French knight, sheathing himself in armour on the eve of St. Crispin, 1415, could be excused a feeling of supreme confidence. The enemy he had to face was a small band of sick and fatigued men—no match for the mighty army of steel-clad Frenchmen. But . . . as night fell on what was to be known for ever as the battle of Agincourt, 10,000 French lay dead, a host including 13 earls, 92 barons and 1,500 knights, destroyed by the English bowmen.

Today, less spectacular perhaps, but equally fatal to protective iron and steel, is the insidious onslaught of extreme corrosion in many industries and coastal areas. For years, untold damage has been caused by this unseen enemy, but now PENFOLD have introduced a veritable 'armour of proof'—fencing that is manufactured from bright drawn STAINLESS STEEL wire, a material renowned for its resistance to the attack of atmospheric corrosion . . . its advantages are manifold. We shall be happy to send you full details on request.

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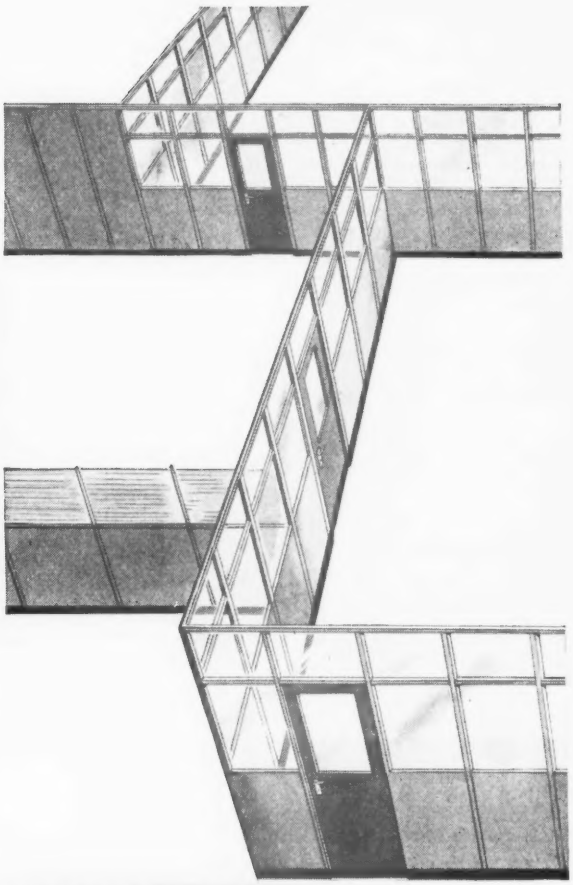

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CONSTRUCT: The ready-made units of differing shapes and sizes can be combined in a great variety of ways. This enables our office partitioning to be "tailored" to suit particular requirements.

ADVISE: We have experienced consultants ready at all times to offer you suggestions as to the planned partitioning of *your* office, bearing in mind the special factors involved.

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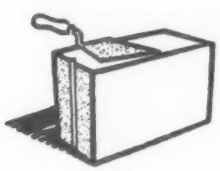

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S I A

BUILDING RESEARCH STATION DIGEST 127

October 1959

Simplified Plumbing for Multi-storey Flats

ON many plumbing systems vent pipes are fitted to prevent unsealing of the traps on the various appliances. These vent pipes are often unnecessary and the single-stack system can then be used. Digests 48 and 49 described the main causes of seal loss, viz. self-siphonage, induced siphonage, and back-pressure, and gave the principles to be followed in designing single-stack systems for two-storey housing.

This Digest gives design rules for single-stack systems for blocks of flats up to 5 storeys high (or 8 storeys for maisonettes), and for a modified form of the one-pipe system requiring a reduced number of vents for blocks of flats or maisonettes up to 15 storeys high.

Stack size

In this Digest the use of 4 in. stacks only is considered. Larger stacks permit a reduction in the number of vents, but no design recommendations can be made as yet. The use of $3\frac{1}{2}$ in. stacks for two-storey housing is described in Digest 49.

Depth of seal

Deep-seal (3 in.) traps should be fitted at all waste appliances. W.C.s should have a minimum seal depth of 2 in.

Pipes and Fittings

Table 1 gives notes on the design of pipes and fittings. The remarks relate to current British Standard appliances, pipes and fittings.

Waste pipes should have a small uniform gradient in the direction of flow and the waste inlet to the stack should be straight or, if it is swept, the sweep should be of not more than 1 in. radius. Any bends in the horizontal plane should be of large radius.

Design of main pipework

Seal losses by induced siphonage and back pressure are found to depend on the amount of water flowing down the stack and on the height of the stack. Table 2 gives the venting required to prevent large seal losses, for various heights of stack and number of connections to the stack.

For the tables it has been assumed that the vent stack will be connected to the W.C. branch, as this is usually the most convenient method of venting; but since the purpose of the vent is to allow air to enter the main stack, the vent stack can be connected directly to the main stack, provided that precautions are taken to prevent back flow from the main stack into the vent stack.

Offsets

An offset in the stack above the topmost connection to the stack has little effect on the performance of the system. Offsets below the topmost connection should be avoided.

The general requirements are summarized in Fig. 4.

Detergents

As far as is known there has been no trouble in this country from foaming of detergents

(Continued on page 4)

Table 1 DESIGN OF SINGLE BRANCHES AND FITTINGS

Component	*Action to be guarded against*	*Design recommendations*
Bend at foot of stack	Back-pressure at lowest branch	Bend to be of long radius (B.S. 65 : 1952, Fig. 4 or equivalent), or two 135° bends to be used. Vertical distance between lowest branch connection and invert of drain to be at least 2 ft 6 in.
Soil branch connection to stack	Induced siphonage lower in the stack when W.C. is discharged	W.C. connections should be swept in the direction of flow. Cast-iron fittings to be to B.S. 416 : 1957. Fittings in other materials should have the same curvature as cast-iron fittings. W.C. branches up to 5 ft long have been used successfully.
Basin waste—1¼ in. trap and 1¼ in. waste pipe	Self-siphonage	3 in. seal trap to be used. **P** traps to be used wherever possible. The maximum slope of the waste to be determined from Fig. 3 according to length of waste. If **S** traps are used, 1½ in. pipe to be used for the horizontal run. Length and slope of horizontal run to be in accordance with Fig. 1. Any bends to be not less than 3 in. radius to centre-line.
Bath waste— 1½ in. trap 1½ in. waste pipe	Self-siphonage	3 in. seal traps to be used. Self-siphonage not as important as for basin. Wastes 7 ft 6 in. long, at a slope of 1¼° to 5° (¼ in./ft to 1 in./ft) have been used successfully.
	Backing up of discharge from W.C. branch into bath branch	Position of entry of bath waste into stack to be as in Fig. 2.
Sink waste— 1½ in. trap 1½ in. waste pipe	Self-siphonage	3 in. seal **P** traps to be used, slope to be not greater than 5° (1 in./ft) for lengths up to 2 ft 3 in. For longer lengths, up to a maximum of 7 ft 6 in., slope to be not greater than 2½° (½ in./ft).

NOTE: Waste pipes longer than the recommended maximum lengths given should be vented, or a larger diameter waste pipe should be used. Venting is preferred, as the increase in bore may lead to lower velocities resulting in the accumulation of deposits and thus a reduction in bore after a period of use.

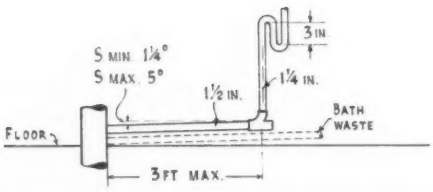

FIG. 1. Design of 1¼ in.–1½ in. waste from wash-basin with 3 in. seal **S**-trap. Maximum allowable slope 5° (1 in./ft). Maximum allowable length 36 in.

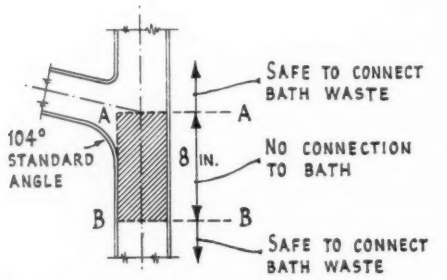

FIG. 2. Recommended positions for connection of bath waste to stack.

Table 2 VENTS REQUIRED FOR VARIOUS LOADING CONDITIONS

No. of storeys	*Stack serving one flat on each floor*	*Stack serving two flats on each floor*	*Remarks*
Flats			
Up to 5	No vents, i.e. single-stack system	Single-stack system	If drain is heavily loaded, 2 in. relief vent at foot of stack to prevent back-pressure
6 to 11	2 in. vent stack to serve one W.C. on alternate floors	2 in. vent stack to serve one W.C. on alternate floors	If ground floor appliances are connected to the stack, a relief vent should be connected at the foot of the stack to prevent back-pressure. (See also para. on "Detergents")
12 to 15	2 in. vent stack to serve one W.C. on each floor	2 in. vent stack to serve one W.C. on each floor	
Maisonettes			
Up to 4	Single-stack system	Single-stack system	If drain is heavily loaded, 2 in. relief vent at foot of stack to prevent back-pressure
5 to 8	Single-stack system	2 in. vent stack to serve one W.C. from each pair	If ground floor appliances are connected to the stack, a relief vent should be connected at the foot of the stack to prevent loss of seal by back-pressure (See also para. on "Detergents")
9 to 15	2 in. vent stack to serve each W.C.	2 in. vent stack to serve one W.C. from each pair	

NOTE: Flats and maisonettes are assumed to contain the usual appliances, viz. a W.C., bath, basin and sink. Where dwellings contain more appliances it may be necessary to provide more vents.

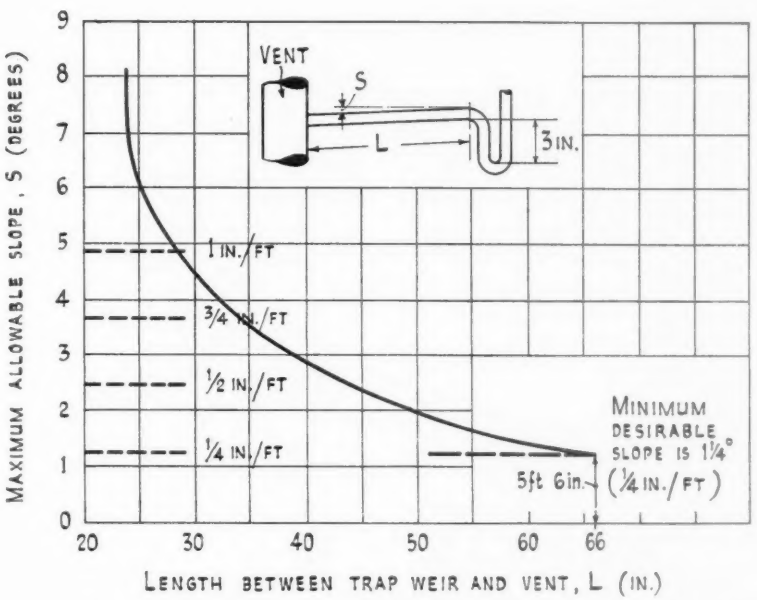

FIG. 3. Design curve for 1¼ in. wastes and 3 in. seal **P**-traps connected to single B.S. lavatory basins. (The slopes recommended are allowable maxima. The pipes need not be fixed at exactly the gradients read off from the graph.)

when waste appliances discharge into a 4 in. stack, but there have been many reports of troubles in tall blocks of flats in the U.S.A. For this reason it may be advisable, in buildings of more than 5 storeys, to connect the ground-floor appliances separately to the drain.

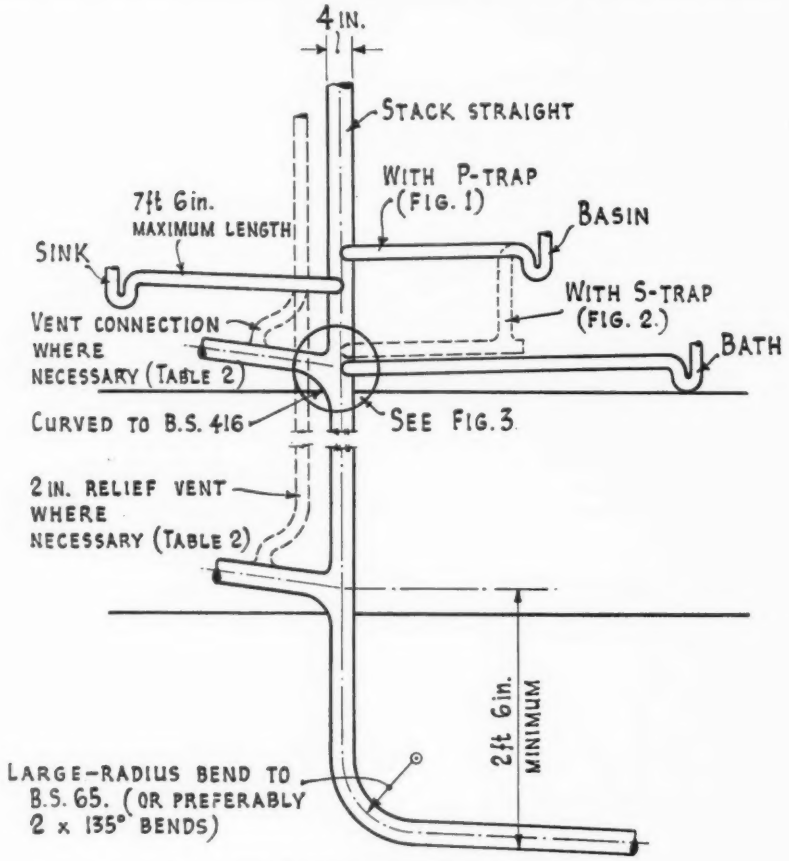

FIG. 4. Main features of design of single-stack system.

(Prepared at the Building Research Station, Garston, Herts.)

Printed in England by Unwin Brothers Limited
and published by
HER MAJESTY'S STATIONERY OFFICE
Single copies 4*d.* each
Annual subscription 6s. including postage

8328B Wt. 33 Ps. 400034 K332 10/59 Gp. 1343 S.O. Code No. 72-22-1-27

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